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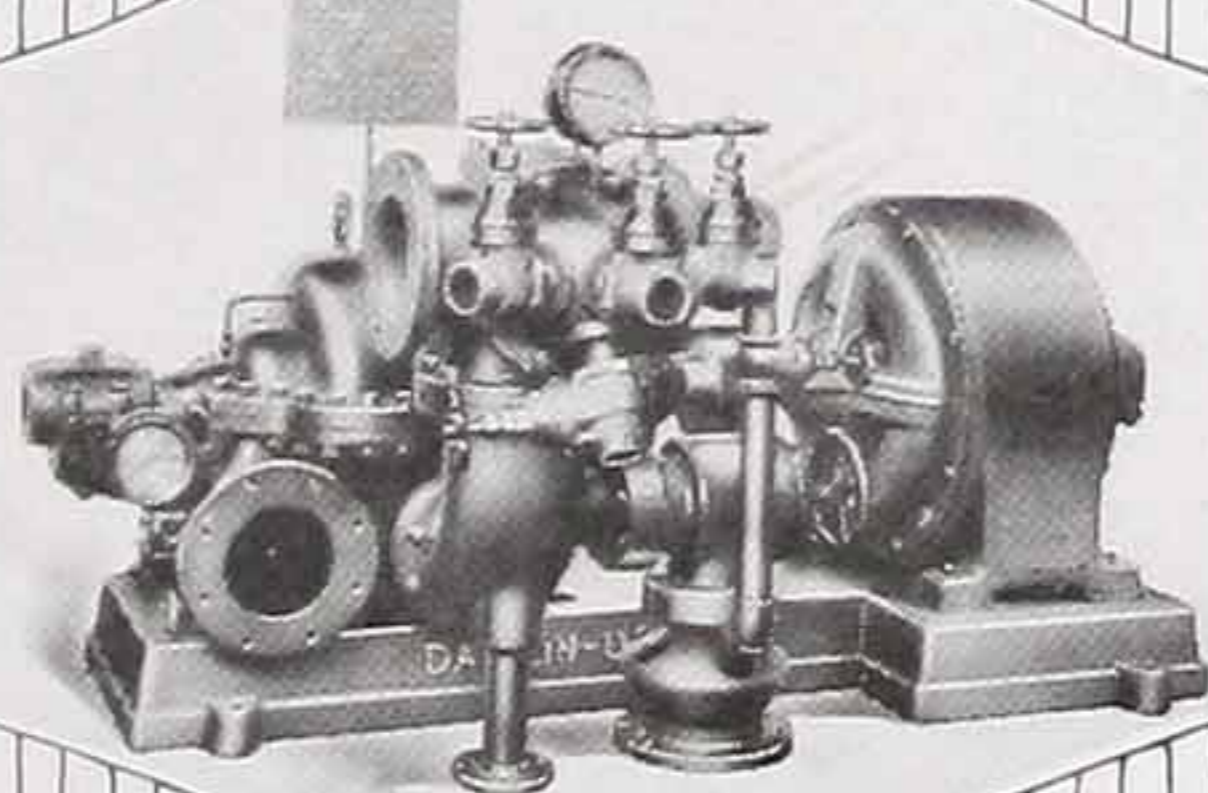
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Dayton-Dowd Centrifugal Fire Pumps



ADEQUATE FIRE PROTECTION

The waste from fire losses in the United States is conservatively estimated at \$300,000 000 a year, which, however, represents only the physical loss of property. The additional loss from suspended business is almost beyond calculation. Certainly this appalling loss and waste should be a matter of much concern to every business executive and adequate means taken to prevent such a catastrophe in his business.

A very large percentage of fires are preventable. Modern building design and construction usually includes some type of fire protection apparatus independent of the local fire fighting units and the majority of such fire prevention equipment consists of automatic sprinklers, or standpipe systems, and centrifugal pumps described in this bulletin.

TESTS AND APPROVAL

DAYTON-DOWD Underwriters Centrifugal Fire Pumps described in this bulletin have been tested and approved by the Associated Factory Mutual Fire Insurance Companies as well as the National Board of Fire Underwriters and meet the requirements and specifications of all Underwriters. The tests and investigations conducted by the Underwriters Laboratories are very thorough, covering general design, methods of construction including foundry and shop practice, practicability of installation and maintenance, strength, durability, reliability of operation, and uniformity or interchangeability of parts. In addition to the preliminary investigations and tests the Dayton-Dowd Company has contracted with the Underwriters Laboratories for yearly re-examination of their fire pumps which guarantees a constant, high standard of construction and assured dependability.

ADVANTAGE OF DAYTON-DOWD CENTRIFUGAL PUMPS

DAYTON-DOWD approved Underwriters Centrifugal Fire Pumps offer many advantages. The pumps are of the automatically balanced type and consequently no thrust bearing troubles are experienced. The discharge and suction openings are both brought out on the same side of the pump, enabling installation to be made in cramped quarters. The pump can be installed to face the wall or not. By the use of a separate hose manifold the discharge can be arranged to point in any required direction. The pump is always ready for duty and can be started instantaneously. There are no parts to stick, dry up or get out of order.

CONSTRUCTION SERVICE

The building and installation of centrifugal fire pumps require close study of the Underwriters' requirements, as well as personal investigation and engineering survey of local conditions which always influence the type of apparatus to be installed. The Dayton-Dowd Company is exceptionally qualified by its experience in the building and installation of fire pumps to take complete charge of all details connected with any fire pump installation and can assure the purchaser that the pump will meet all requirements of the Underwriters' Inspection Department. The purchaser is thus relieved of responsibility and perhaps much needless expense by the expert services of our engineering and construction departments. We are prepared to execute complete contracts covering the furnishing of suitable equipment and installation work, or supply the pump with driving and control units for installation by the purchaser, in which case our engineering service is always available for suggestion or advice.

ECONOMY AND SAVINGS

Aside from the physical protection afforded by the installation of DAYTON-DOWD Centrifugal Pumps, large savings accrue as a result of reduced insurance rates on the risk so protected. These savings, varying from 60 to 85%, are enough to repay the original investment within a few years, and the savings thereafter are net, and show a nice profit each year. There are several well reputed concerns who install automatic sprinklers and fire pumps on a lease basis without capital investment on the building owner's part, allowing the saving in rates to pay for the system, after which the system is released to the owner, who profits not only by increased assets, and adequate fire protection but by large savings each succeeding year in premiums. The Dayton-Dowd Company invites correspondence relating to fire protection in your plant.

MOTOR DRIVEN CENTRIFUGAL FIRE PUMPS

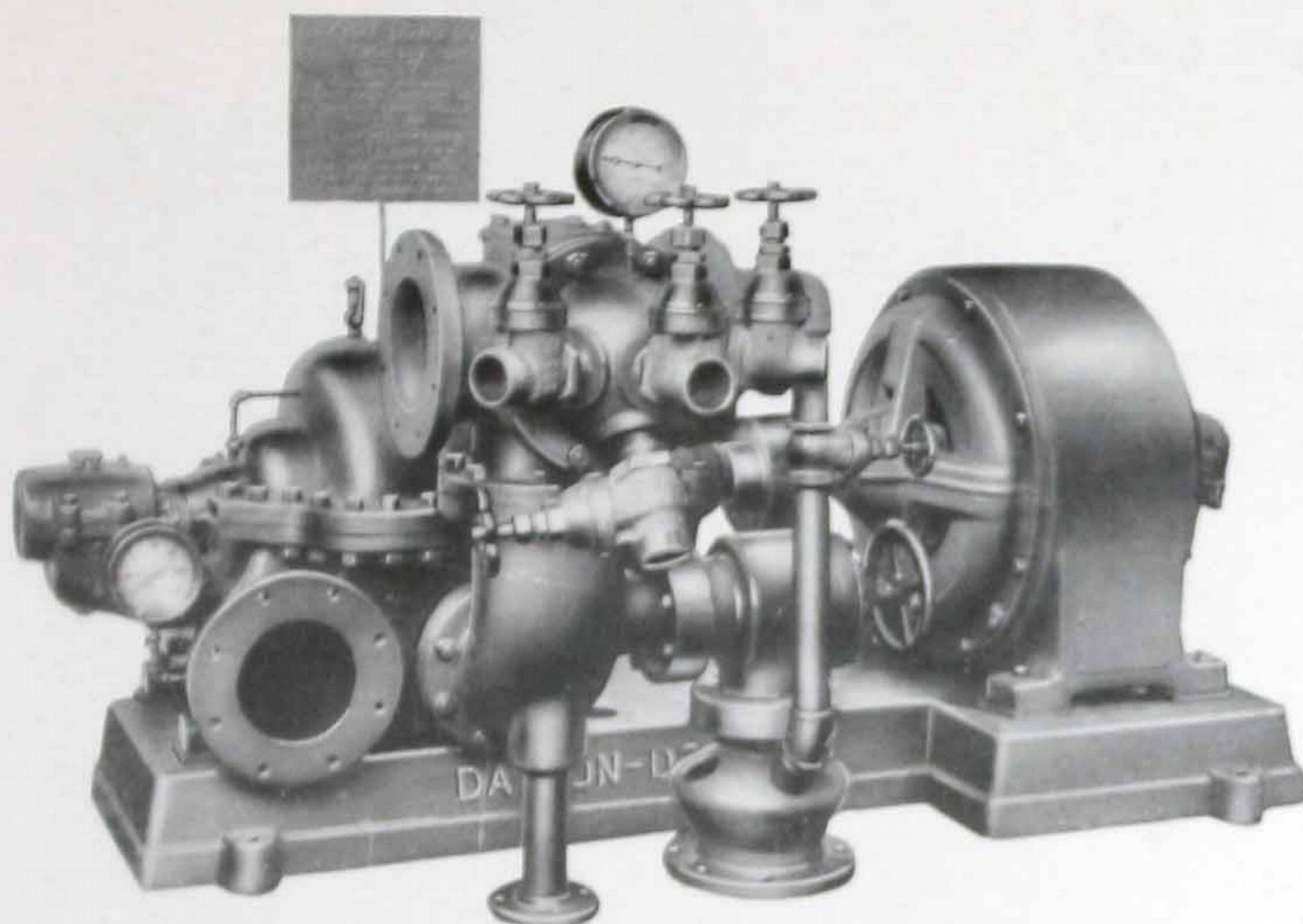


Fig. 126. Dayton-Dowd Approved Underwriters 1,000 Gallon Motor Driven Centrifugal Fire Pump. Four $1\frac{1}{8}$ " Hose Streams at 100 lbs. Pressure

Where electric current from a reliable source is available the motor driven Underwriters' Centrifugal Pump affords a thoroughly dependable fire protection unit. Each installation must be considered individually by the Inspection Department having jurisdiction, to determine the reliability of the current supply which is so affected by local conditions that only a personal investigation can determine this factor.

Motor driven centrifugal fire pumps are controlled by the manual type of starting equipment or by the combined manual and automatic type of control panel as specified by the Inspection Department, which must be of approved design for fire pump control.

Where conditions of installation require it motors are furnished totally enclosed and fan ventilated.

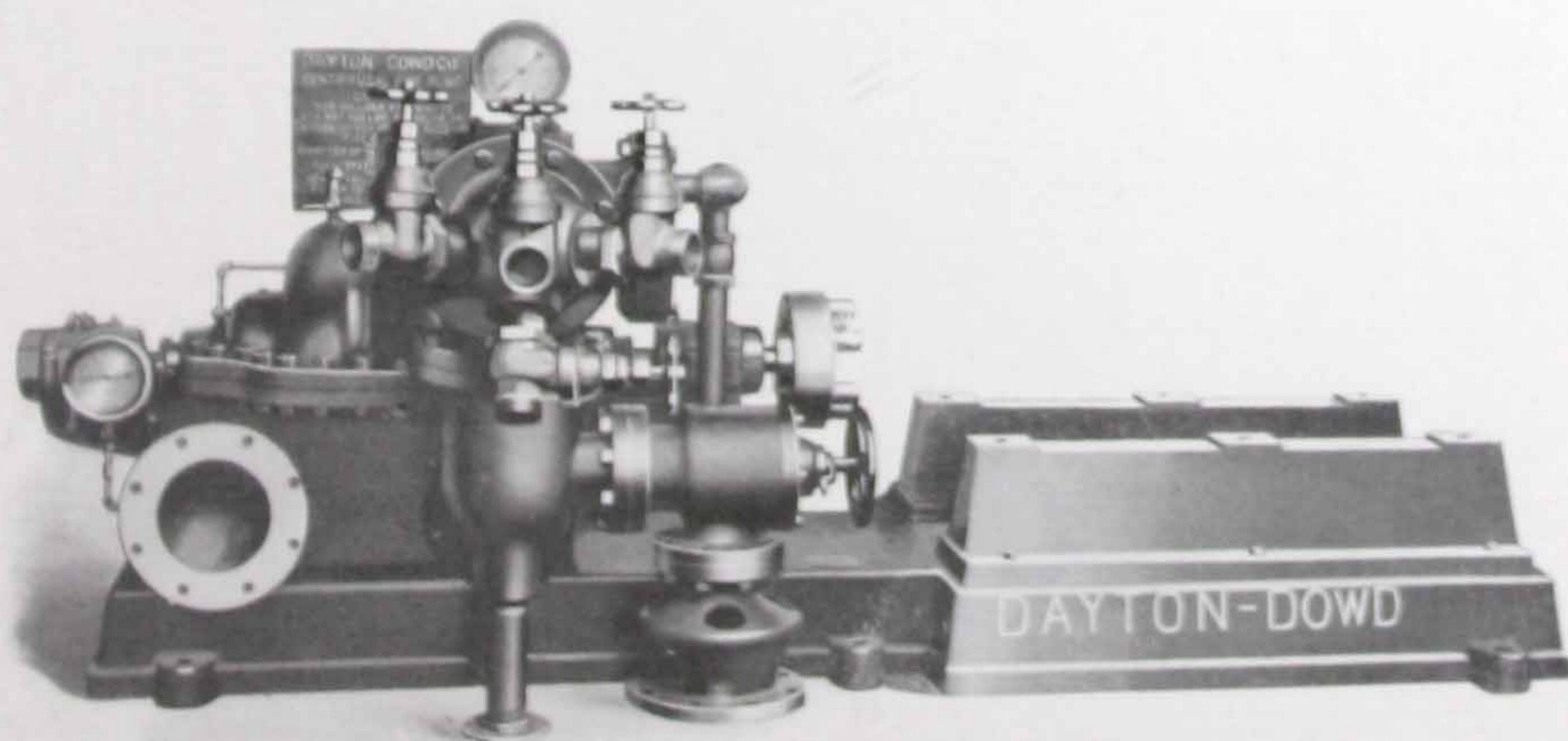


Fig. 116. Dayton-Dowd Type CSU Automatically Balanced Approved Underwriters' 1,000 Gallon Centrifugal Fire Pump. Four $1\frac{1}{8}$ " Hose Streams at 100 lbs. Pressure

GASOLINE ENGINE DRIVEN FIRE PUMPS

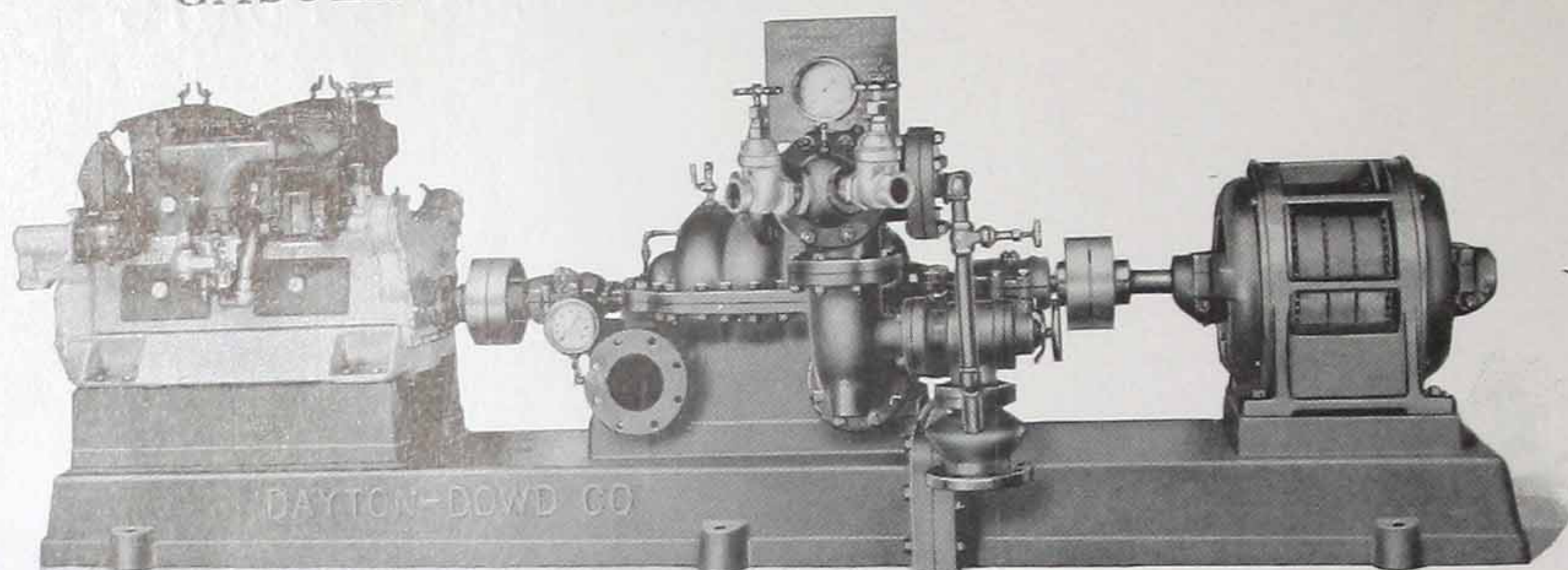


Fig. 182. Dayton-Dowd Approved Underwriters' Centrifugal Fire Pump arranged with dual drive consisting of electric motor and auxiliary gasoline engine. Capacity 500 gallons against a head of 100 lbs., speed 1150 RPM.

Isolated industrial plants, as well as towns and villages which are dependent upon one source of power for the operation of fire pumps frequently install auxiliary gasoline engine driven pumping outfits as standby units. Others install a double drive consisting of electric motor or turbine and gasoline engine, one mounted on each side of the fire pump as shown on this page. This is a convenient method of installation and affords perfect dependability in case of failure of the electric or steam power. The gasoline engine drive for fire pumps is approved by the Associated Factory Mutual Fire Insurance Companies as well as the National Board of Fire Underwriters for special installations.

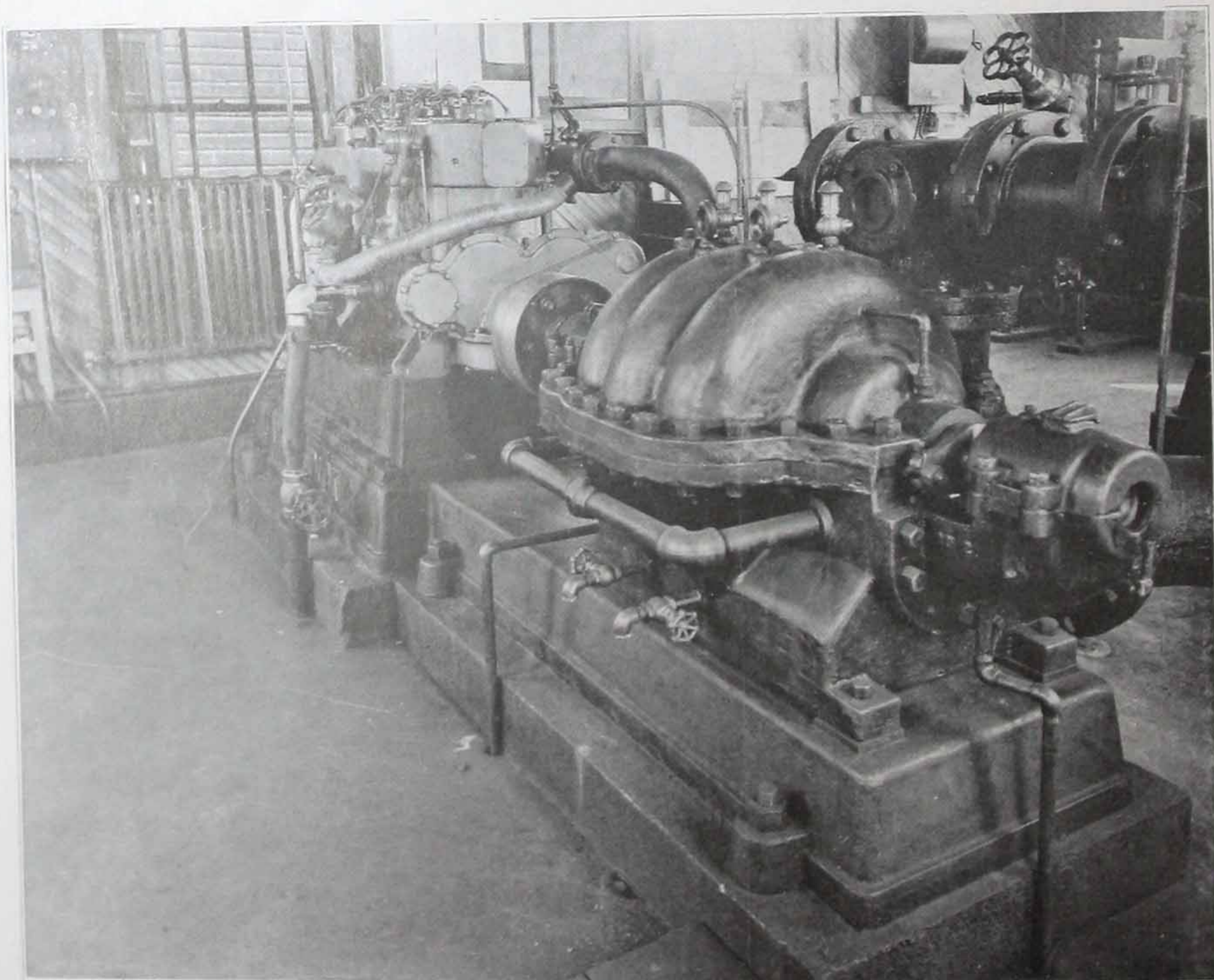


Fig. 111. Dayton-Dowd Approved Underwriters' Centrifugal Fire Pump installed in United States Naval Station, Cape May, N. J. This is a three-stage pump having a capacity of 100 gallons against a pressure of 100 lbs. Driven by gasoline engine at speed of 1200 RPM.

TURBINE DRIVEN CENTRIFUGAL FIRE PUMPS

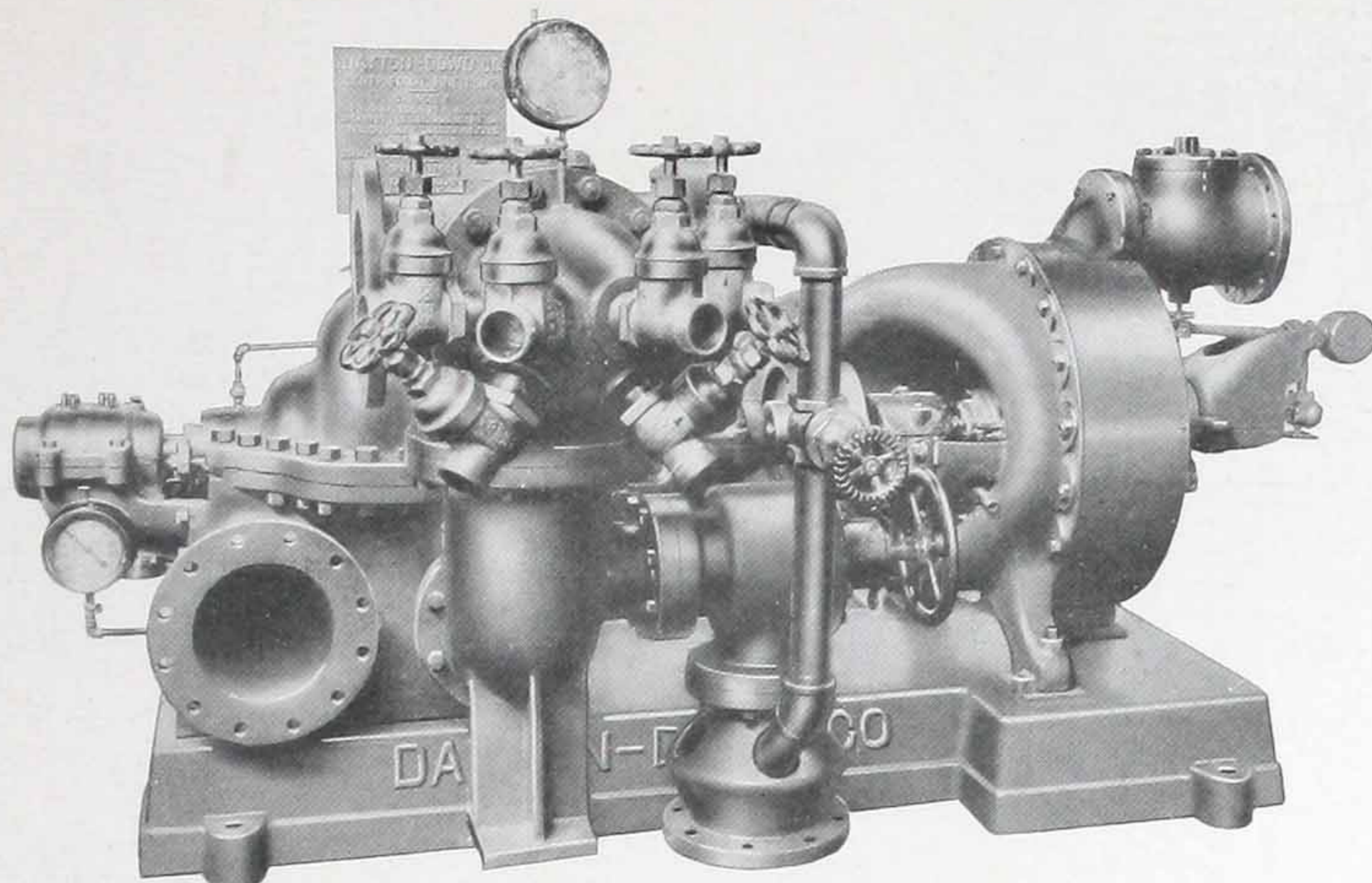


Fig. 127. Dayton-Dowd Approved Underwriters 1,500 Gallon Centrifugal Fire Pump Direct Connected to Steam Turbine. Six $1\frac{1}{8}$ " Hose Streams Against a Pressure of 100 lbs.

Where a dependable source of steam is available, steam turbine driven centrifugal fire pumps are frequently installed. Steam turbines for driving centrifugal fire pumps must be capable of driving pump at full speed and load with steam pressures varying from 75 to 150 pounds. The turbine driven fire pump because of its adjustable speed characteristic is advantageously used for installations where it is necessary or desirable to pump against high pressures with a reduced capacity, as in the case of very tall buildings or long hose lines. For such conditions DAYTON-DOWD impellers are designed with a steep characteristic. The flexibility and dependability of steam turbine centrifugal fire pumps are important factors in their favor.

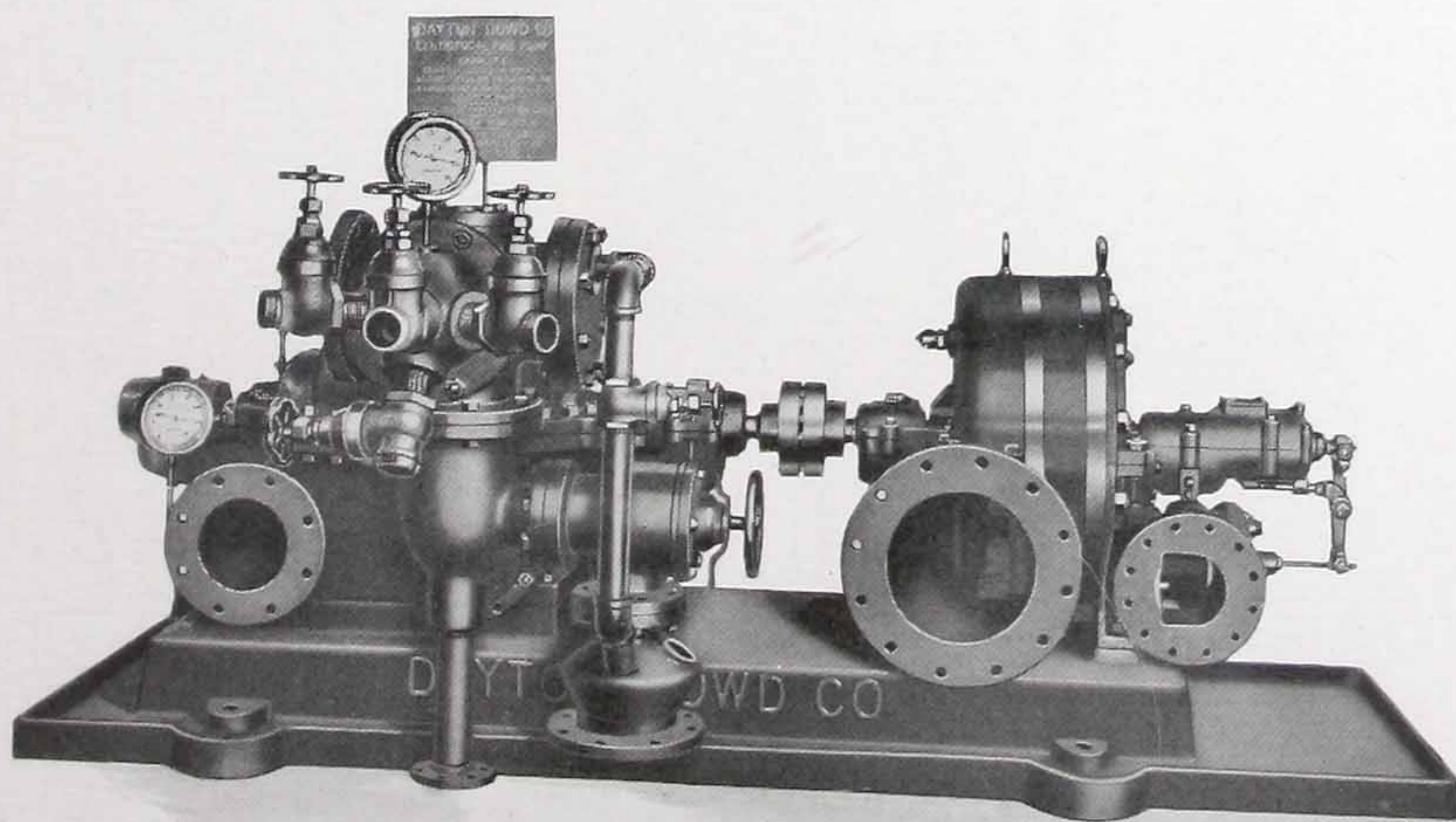


Fig. 195. Dayton-Dowd Approved Underwriters 1,000 Gallon Centrifugal Fire Pump Direct Connected to Steam Turbine. Four $1\frac{1}{8}$ " Hose Streams Against 100 lbs. Pressure

THE PUMP

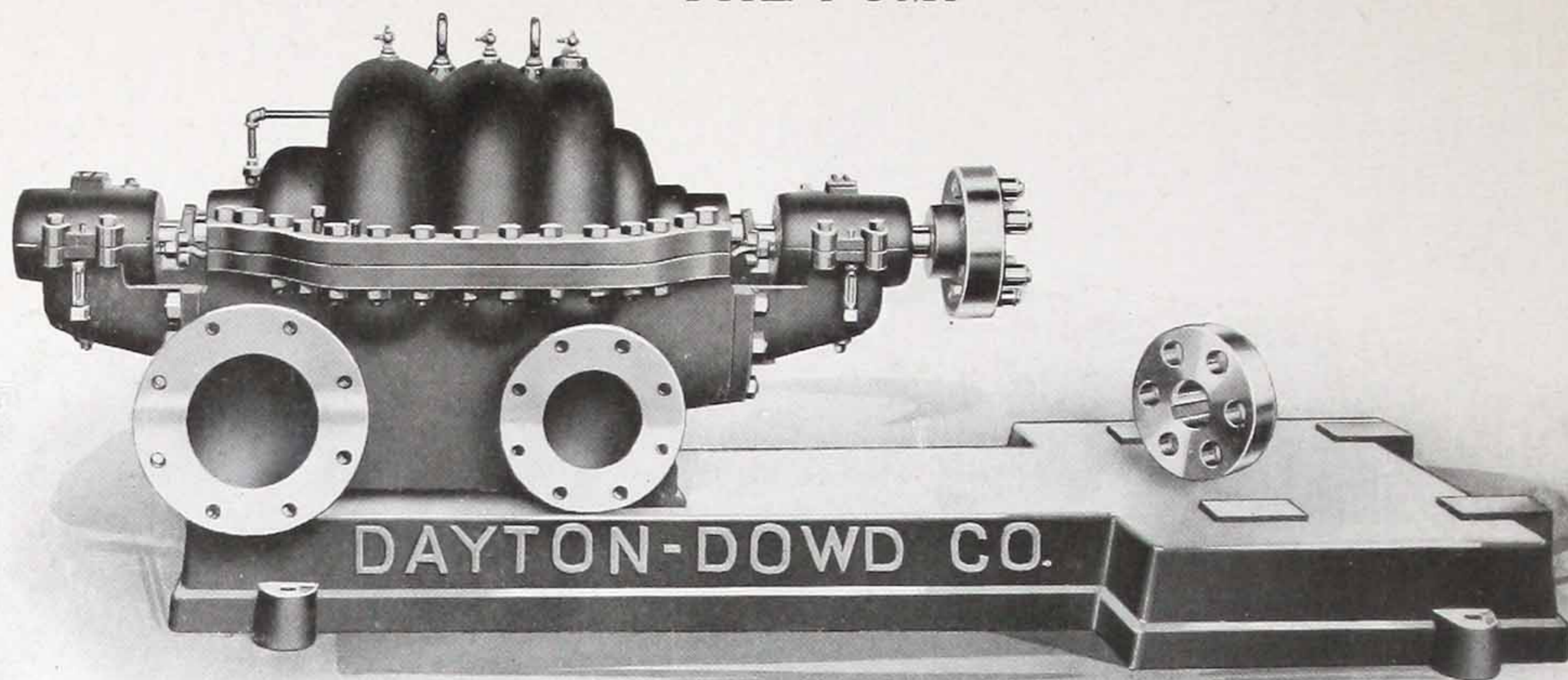


Fig. 631

The cut above and sectional view below illustrate the construction of the DAYTON-DOWD type CSU automatically balanced centrifugal fire pump. This shows the pump without fire fittings attached, and without prime mover. The compactness and simplicity of design together with rugged construction are clearly revealed from a study of these illustrations.

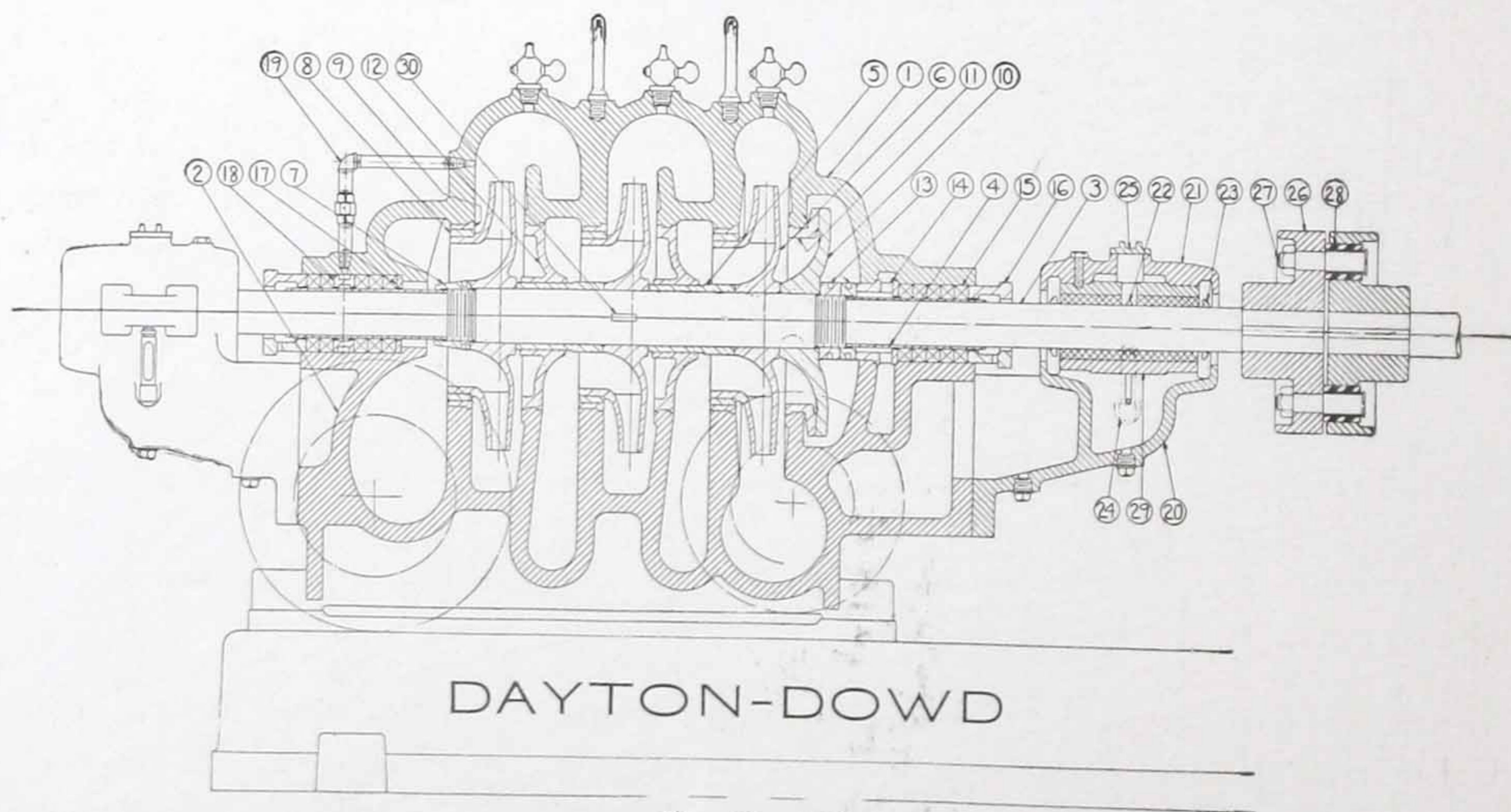


Fig No. 632

Sectional View of Type CSU Multi-Stage Automatically Balanced Approved Underwriters Centrifugal Fire Pump

Patented

- | | | |
|--------------------------------|---------------------------------|----------------------------------|
| 1—Upper Casing (CI) | 11—Balance Disc Seat (Bronze) | 21—Bearing Cap (CI) |
| 2—Lower Casing (CI) | 12—Case Bushings (Bronze) | 22—Oil Rings (Bronze) |
| 3—Shaft (Steel) | 13—Lock Nuts (Bronze) | 23—Oil Guards (Bronze) |
| 4—Shaft Sleeves (Bronze) | 14—Water Seal Rings (Bronze) | 24—Oil Gauge |
| 5—Spacing Sleeves (Bronze) | 15—Packing | 25—Oil-hole Cover (CI) |
| 6—Impeller (Bronze) | 16—Stuffing Box Glands (Bronze) | 26—Coupling (CI) |
| 7—Impeller Nuts (Bronze) | 17—Stuffing Box Bottom (Bronze) | 27—Coupling Pin (Steel) |
| 8—Impeller Wearing Rings (Br.) | 18—Skeleton Rings (Bronze) | 28—Coupling Bushings (Rubber) |
| 9—Case Wearing Rings (Bronze) | 19—Water Seal Piping (WI) | 29—Bearing Shells (CI & Babbitt) |
| 10—Balance Disc (Bronze) | 20—Bearing Brackets (CI) | 30—Woodruff Keys (Steel) |

SPECIFICATIONS DAYTON-DOWD CENTRIFUGAL FIRE PUMPS

The pump proper consists of the DAYTON-DOWD type CSU automatically balanced multi-stage design, the number of stages being determined by the pressure to be developed by the pump and the speed available for driving within the limits specified by the Underwriters. Motor speeds allowable are standard speeds not exceeding 1800 RPM. Steam turbine speeds must not exceed 2500 RPM. Underwriters specifications limit the number of stages to four.

DAYTON-DOWD type CSU Fire Pumps are of the split case design, the upper half being easily removable for inspection or repairs without disturbing the alignment or piping. The suction and discharge nozzles are cast integral with lower half of casing. The bearings are separate from the pump chamber proper so water cannot leak into them through the stuffing boxes. The bearings are of the cast iron split shell type lined with genuine babbitt. The pump casing is cast of close grained grey iron of sufficient strength to withstand the pressure developed by the pump with a large factor of safety.

The impellers, impeller and case wearing rings, water seal, stuffing boxes, gland bolts and all fittings are made of bronze. The shaft is of high carbon steel accurately turned and ground and is protected from contact with liquids by bronze sleeves. A cast iron bedplate of the box type extends under the pump and prime mover.

FIRE PUMP FITTINGS

DAYTON-DOWD Centrifugal Fire Pumps are equipped complete with discharge fittings, hose manifold and gauges as specified by the Underwriters. A relief valve is also furnished. Where the fire pump is installed below the sewer level, the open type overflow cone cannot be used, and for such conditions we furnish an overflow cone of the enclosed pattern fitted with glass bulls-eyes so the pump attendant can see the discharge from the starting valve in starting the pump. The discharge fittings are furnished either for the standard of the National Board of Fire Underwriters; the Associated Factory Mutual Fire Insurance Companies; or of the type used by the Chicago Board of Underwriters.

The DAYTON-DOWD Centrifugal Fire Pumps are approved by the Associated Factory Mutual Fire Insurance Companies; The National Board of Fire Underwriters; and the National Fire Protection Association. DAYTON-DOWD Fire Pumps are built strictly in accordance with the specifications issued by these associations, and comply with all their regulations.

DAYTON-DOWD Centrifugal Fire Pumps are built in the following standard sizes. The Dayton-Dowd Company has also furnished many fire pumps of smaller capacity for various pressures to meet the requirements of local ordinances or Underwriters, and is prepared to supply and install such equipment in any locality.

Size GPM	Size Suction	Size Discharge	Size Relief Valve	Size Starting Valve	Size-Waste Pipe Con- nection	No. of Hose Valves
500	6"	6"	3"	1 1/4"	5"	2
750	6"	6"	3 1/2"	1 1/2"	6"	3
1000	8"	8"	4"	2"	7"	4
1500	10"	10"	5"	2 1/2"	8"	6

Dayton-Dowd & Quincy, Ill.

HIGH PRESSURE INSTALLATIONS

The new Wrigley Building in Chicago is equipped with a Dayton-Dowd Underwriters' approved Centrifugal Fire Pump. This pump is a 5" 4-stage delivering a capacity of 500 gallons per minute at a pressure of 230 lbs. The pump is driven by a totally enclosed, ventilated type of motor operating at a speed of 1,750 RPM. The photograph of the building shows test stream being delivered by the pump, 70 feet above the top of the tower.



Fig 229

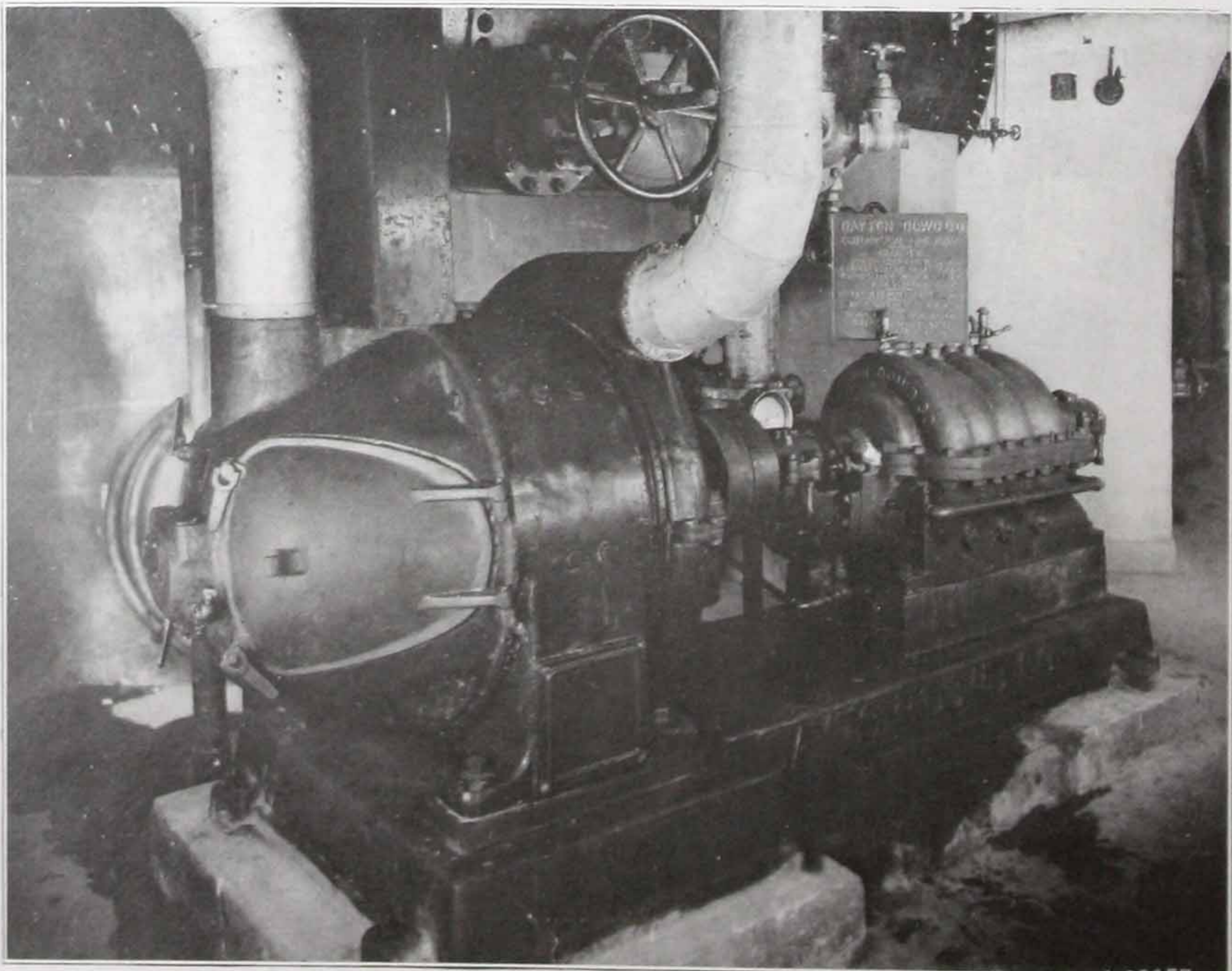


Fig. 230

Dayton-Dowd Co. Quincy, Ill.

AN UNUSUAL INSTALLATION



Fig. 233

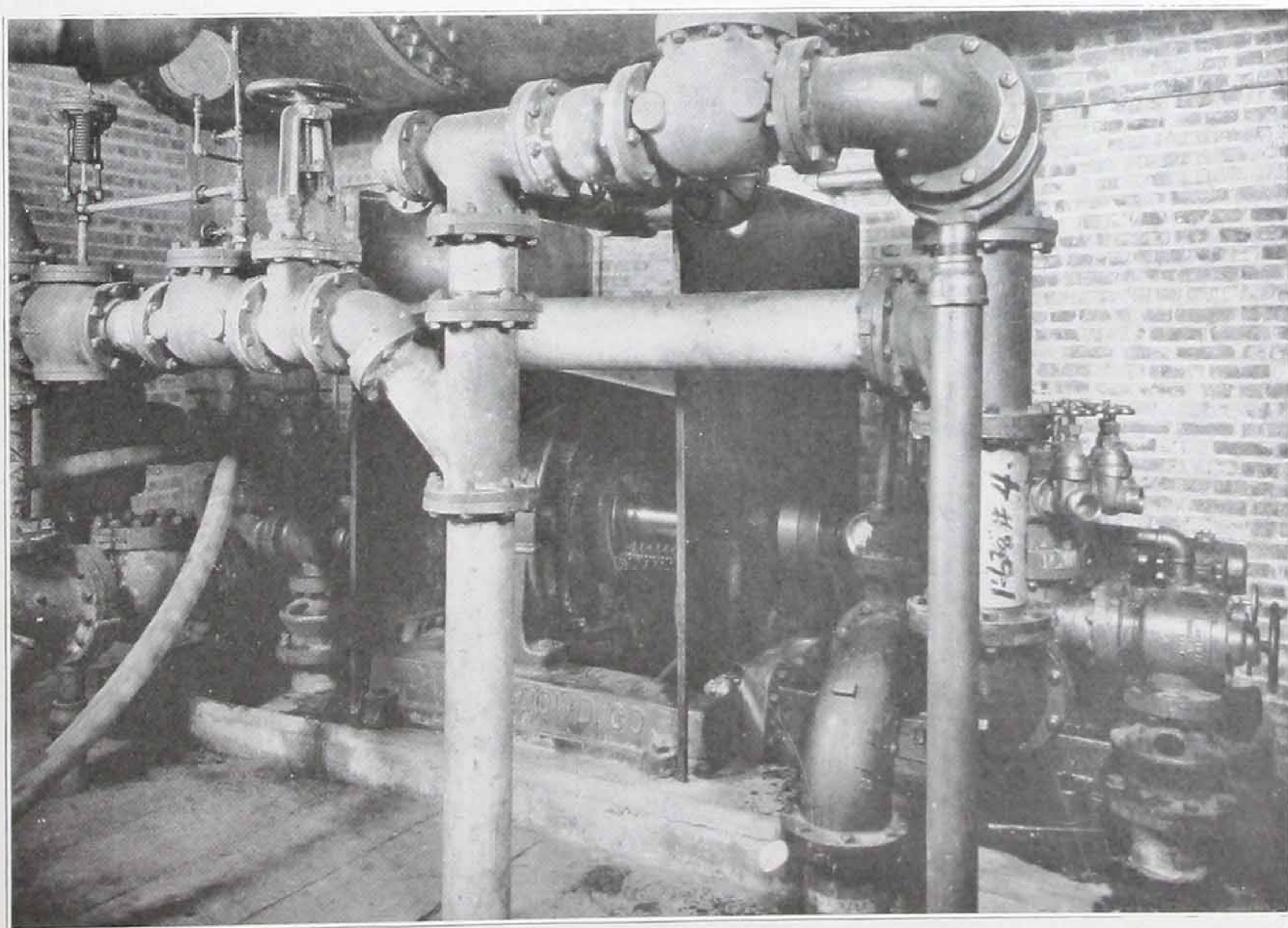


Fig. 231. This installation, in the Chicago Tribune plant, consists of two Dayton-Dowd approved Underwriters' 1,000 gallon Centrifugal fire pumps mounted on one base with driving motor between. This is rather an unusual unit and is designed to operate in series or parallel under varying conditions of head and capacity. The Underwriters' acceptance test of this unit showed the following results: 566 gallons against 298 pounds (698 feet) when operated in series; 981 gallons against 230 lbs. in series. When operated in parallel this unit delivers a capacity of 2,000 GPM against a pressure of 100 lbs. In the photograph shown above the discharge lines from the pumps were siamesed into one 1 $\frac{1}{4}$ " discharge nozzle delivering a capacity of 566 gallons per minute at a pressure of 298 lbs.

TYPICAL INSTALLATIONS OF DAYTON-DOWD CENTRIFUGAL FIRE PUMPS

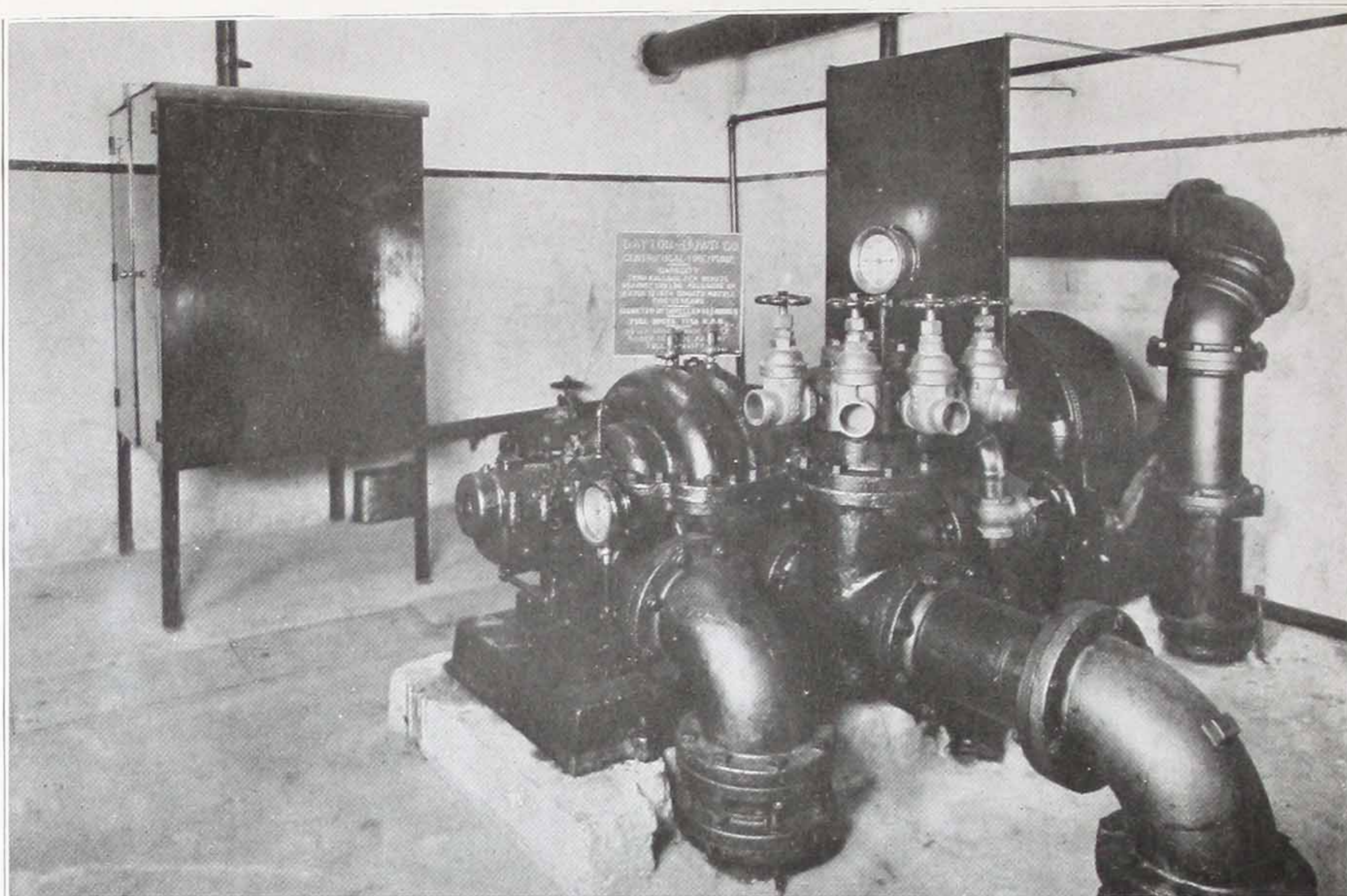


Fig. 102. Dayton-Dowd Approved Underwriters' Centrifugal Fire Pump installed in Packard Motor Car Co. service station, Detroit, Mich. Capacity 1,000 gallons against a pressure of 100 lbs. Driven by electric motor at speed of 1700 RPM.. This installation is controlled by manually operated starter

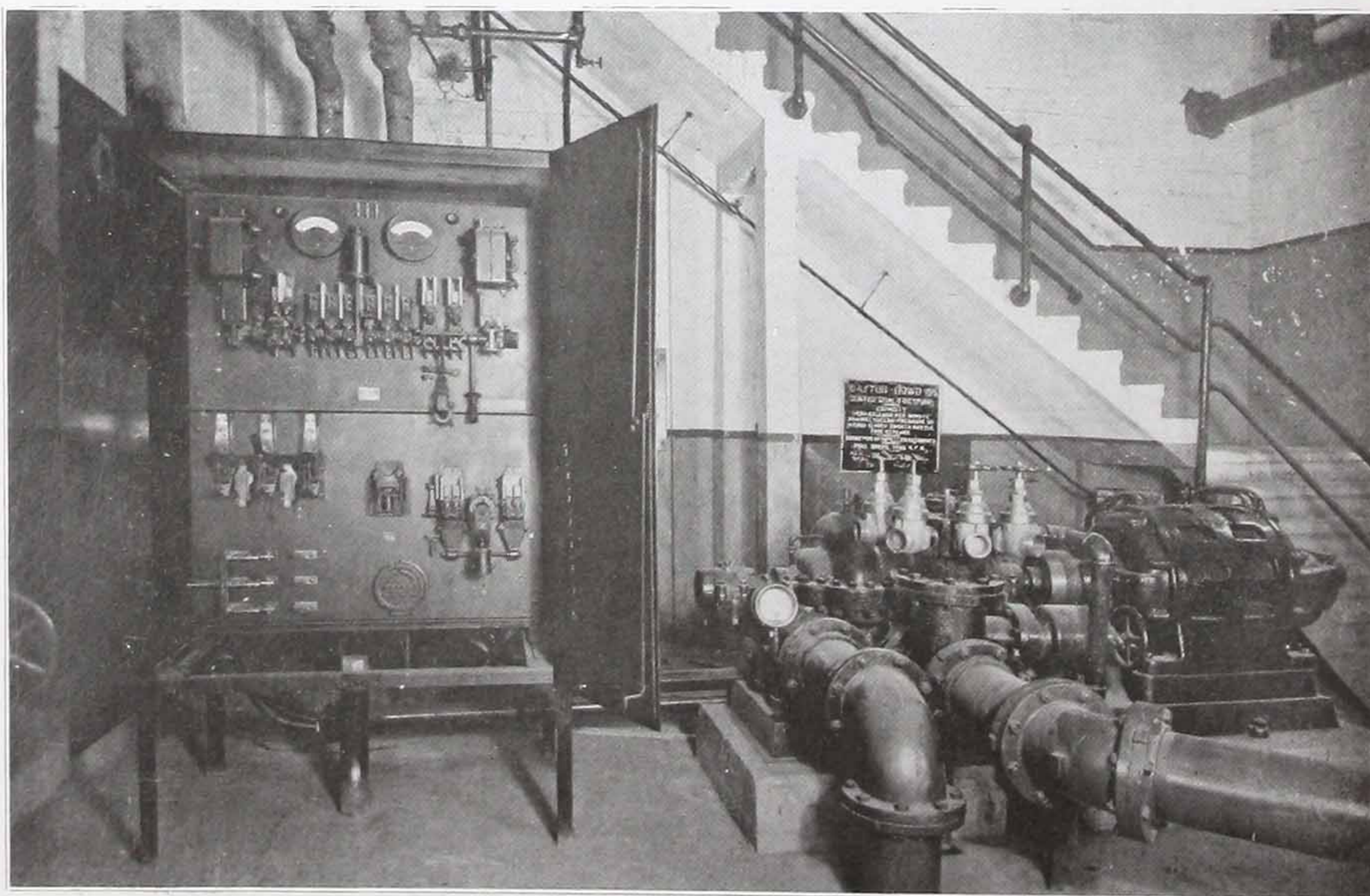


Fig. 101. Dayton-Dowd Approved Underwriters' Centrifugal Fire Pump installed in Cadillac Motor Car Co., Detroit, Mich. Capacity 1,000 gallon against a pressure of 100 lbs. Driven by electric motor at speed of 1700 RPM. This installation controlled by combined manual and automatic control panel

TYPICAL INSTALLATIONS OF DAYTON-DOWD CENTRIFUGAL FIRE PUMPS

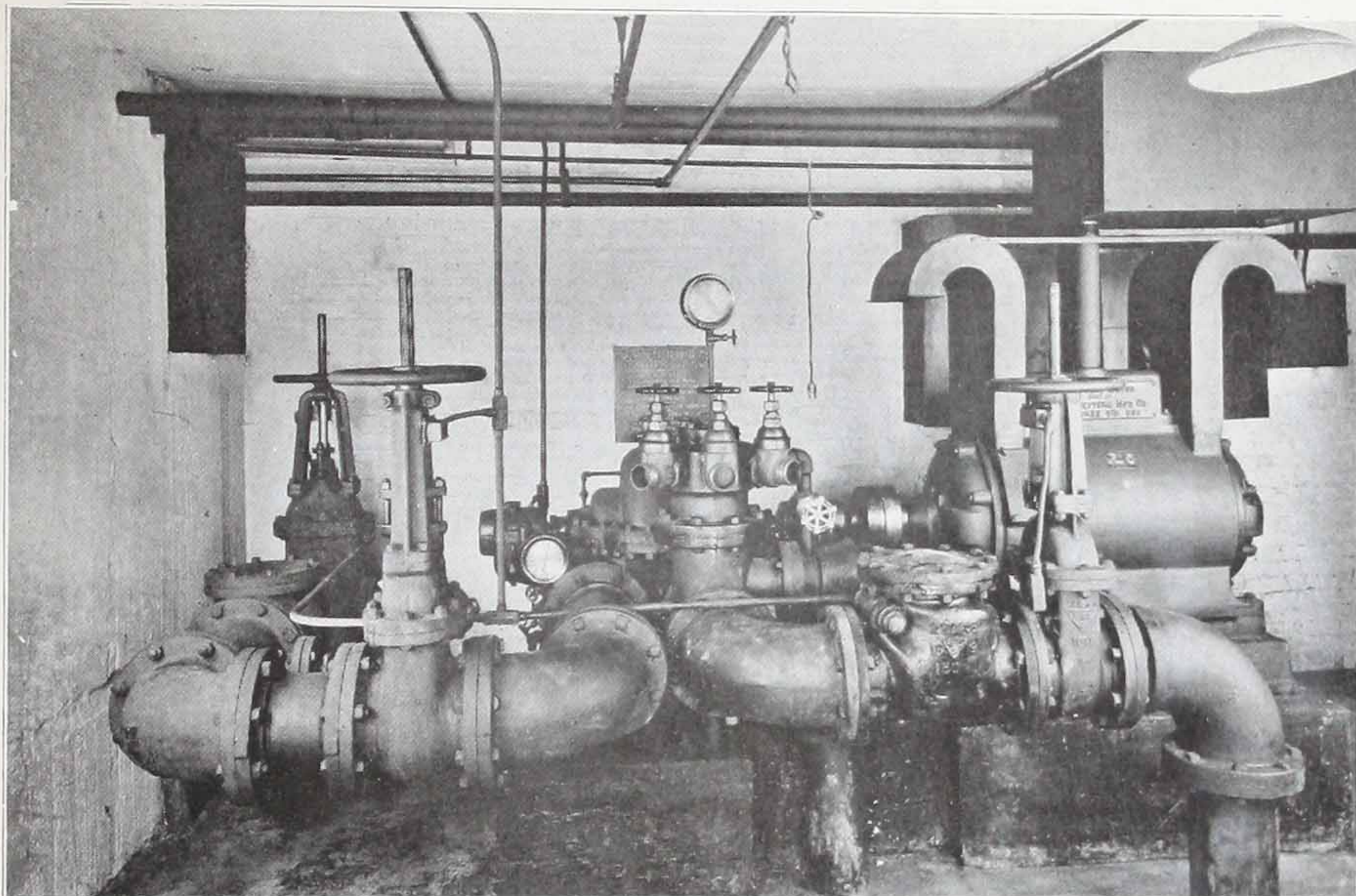


Fig. 234. Dayton-Dowd Approved Underwriters Centrifugal Fire Pump installed in Phillipsborn Catalog House, Chicago. Capacity 1,000 gallons against 100 lbs. pressure. Speed 1750 RPM. This pump is driven by a totally enclosed and ventilated motor

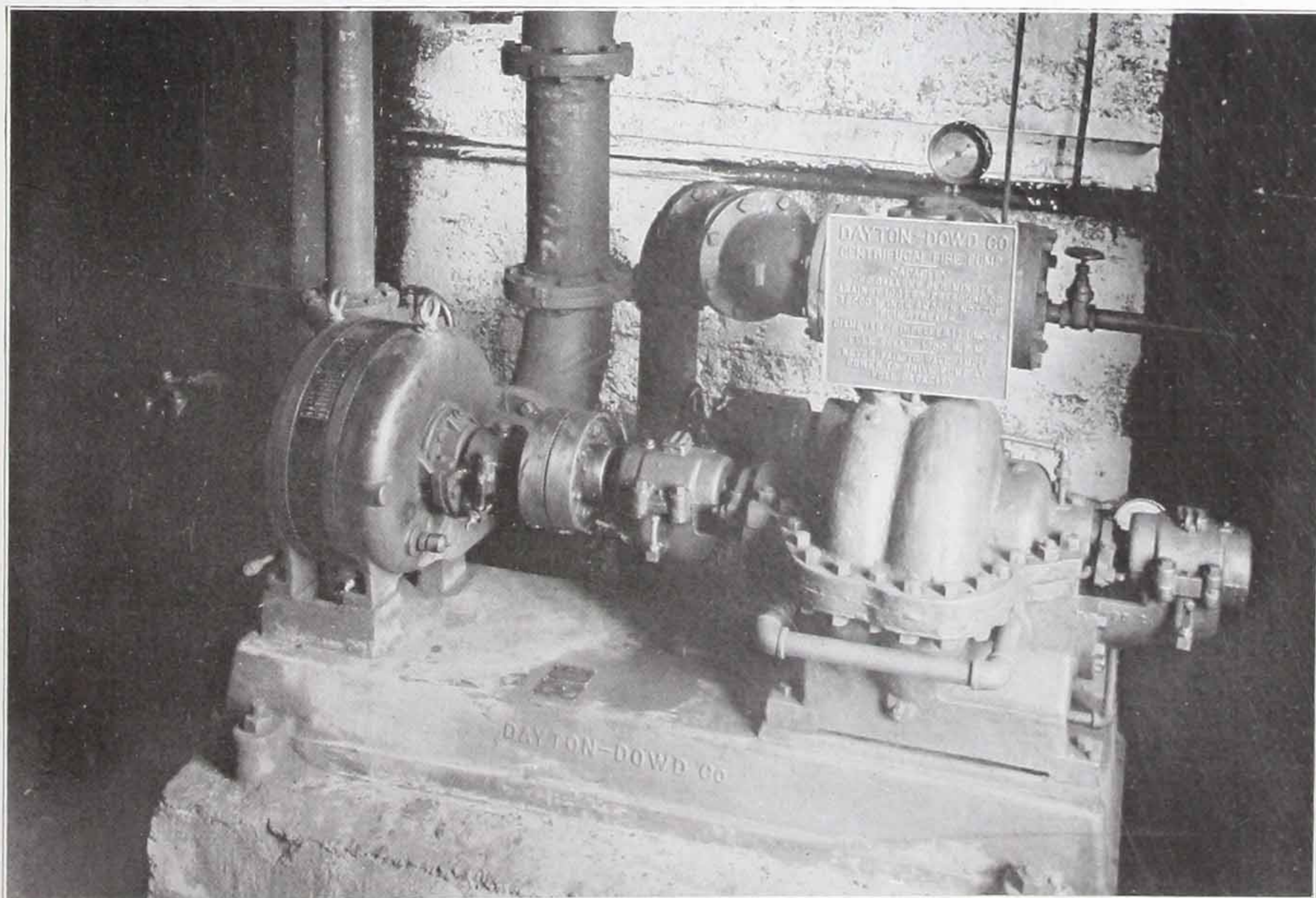


Fig. 207 Dayton-Dowd Approved Underwriters' Centrifugal Fire Pump installed in mine of Chicago, Wilmington and Franklin Coal Co., at West Frankfort, Illinois. Capacity 750 gallons per minute against a pressure of 125 lbs. Driven by steam turbine at speed of 1750 RPM. This pump is installed with discharge facing the wall

DAYTON-DOWD TANK FILLING PUMPS

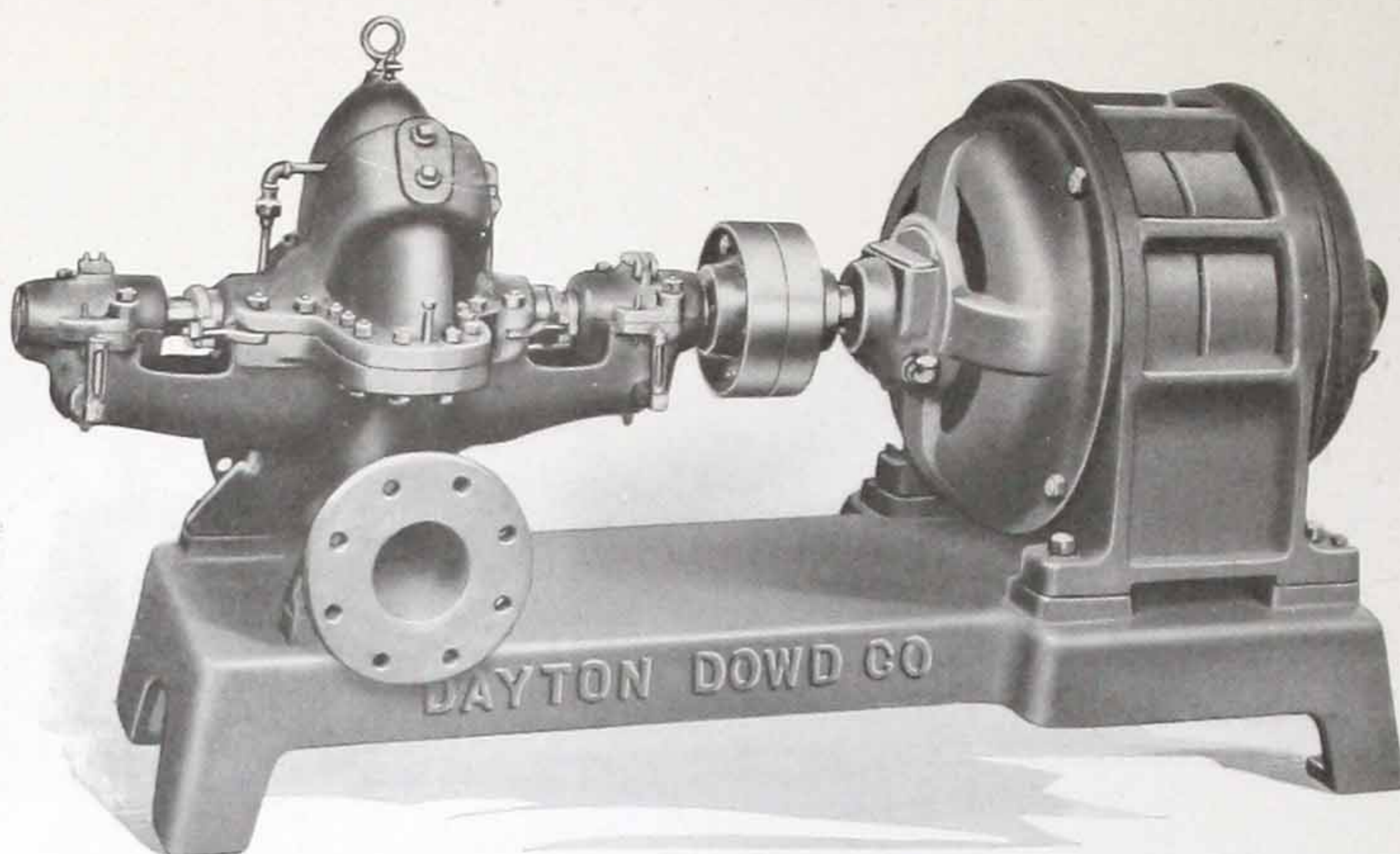


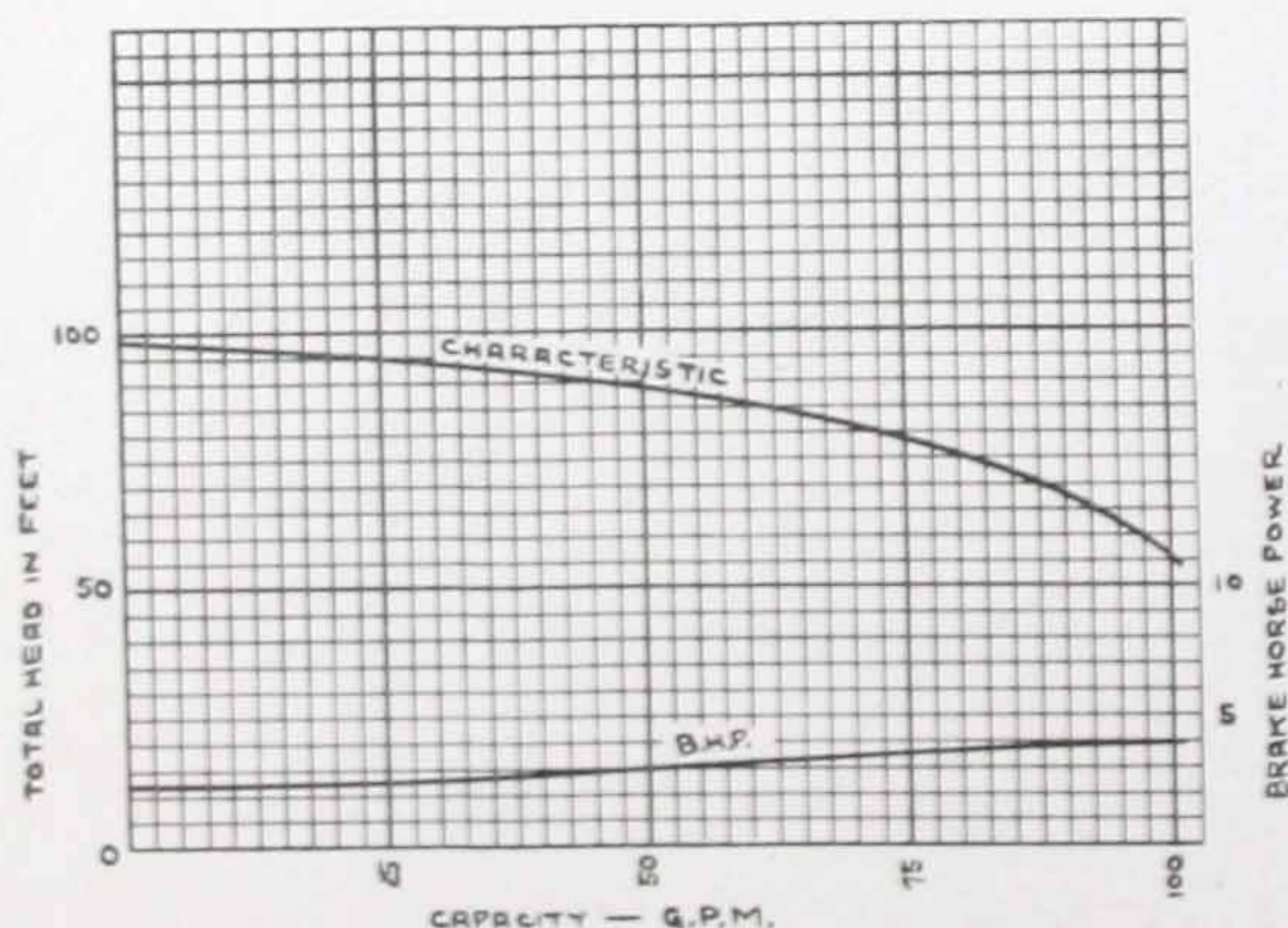
Fig. 228

The DAYTON-DOWD Type CST motor driven tank filling pumps illustrated on this page meet all the requirements of the Underwriters and are approved by the various Inspection Departments.

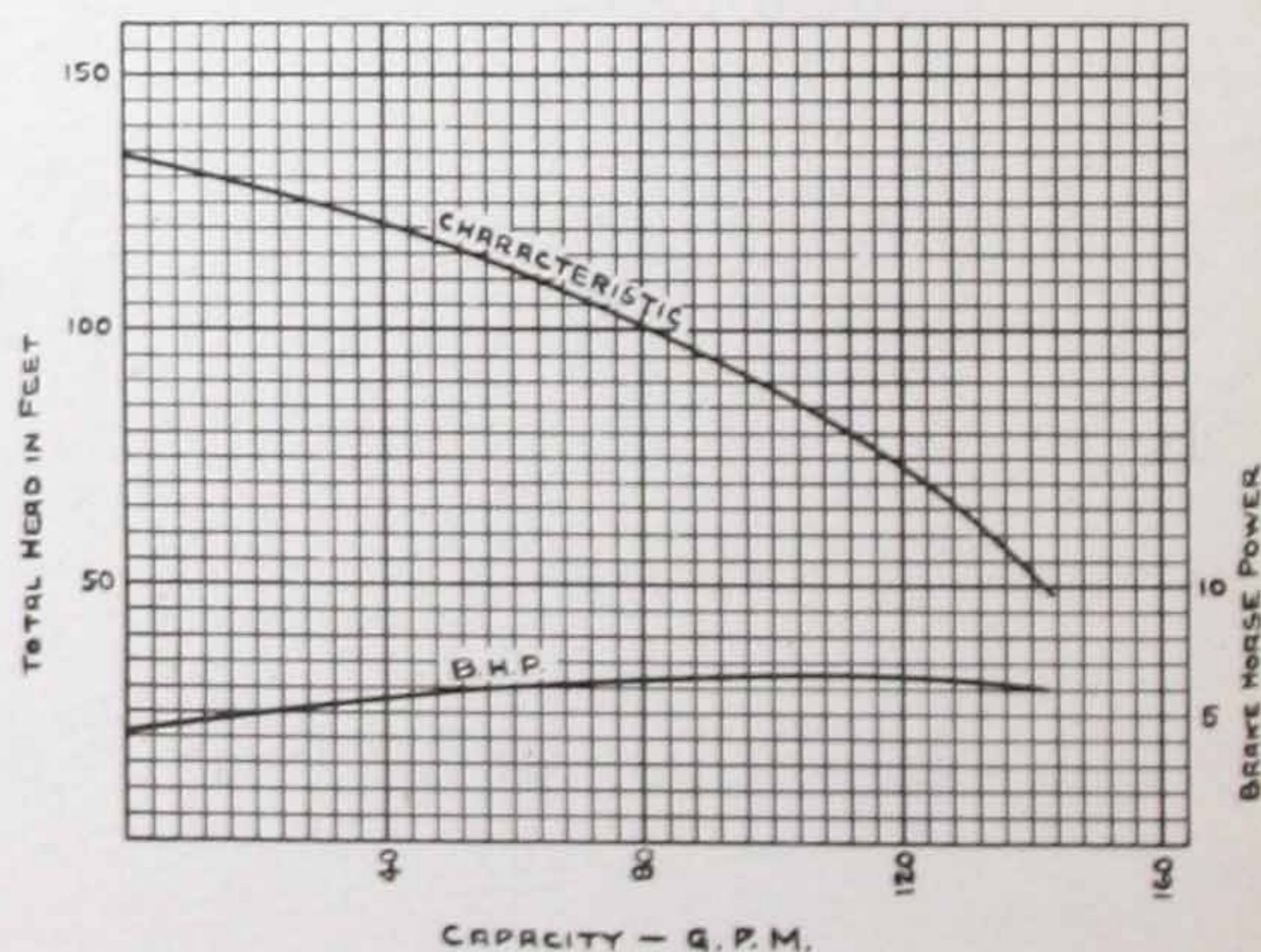
The pump is of the horizontally split case design, the upper half of the case being easily removable for inspection or repair without disturbing the alignment or piping. The bearings are separate from the pump casing proper so that water cannot enter them. They are of the ring oiling babbitted type. The impellers are of the enclosed type made of bronze and protected with case wearing rings. The stuffing boxes are large and of the water sealed type. All fittings are of bronze. The base is a special cast iron pedestal type as illustrated.

Tank filling pumping service requires that the pump operate against a variable head due to the rise and fall of the water in the tank. The DAYTON-DOWD Type CST Pump for this purpose has been developed and designed especially to meet this condition of operation in a most satisfactory manner. The characteristics produced by the impeller design of these pumps show a flat brake horse power curve over a wide range of head and produce a steep characteristic. This characteristic protects the motor from heating and overload under any conditions of service.

In addition to tank filling service the type CST pump is also furnished for house pressure service.



Characteristic curve C749 of type CST 1½" Pump at 1750 RPM.



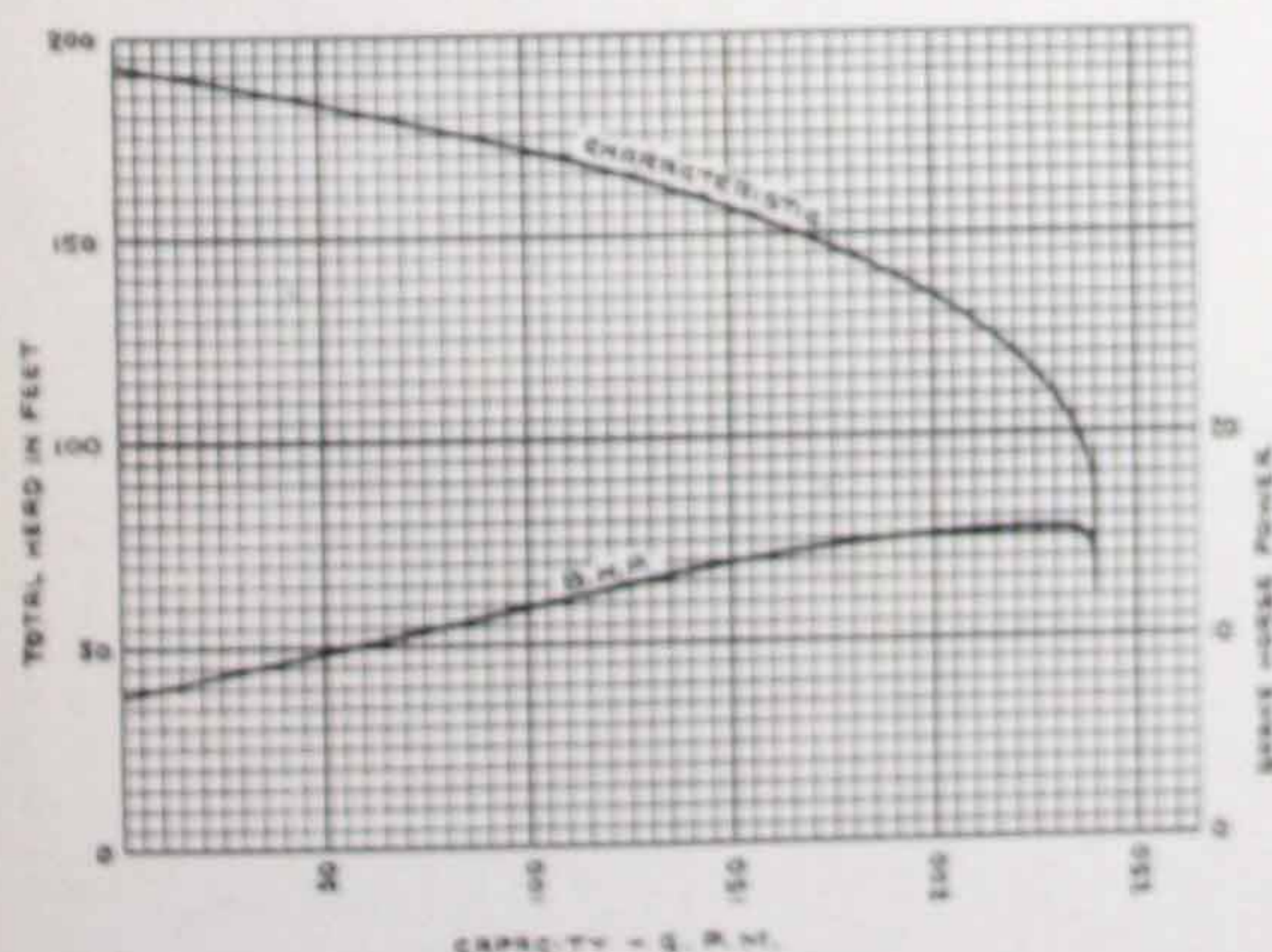
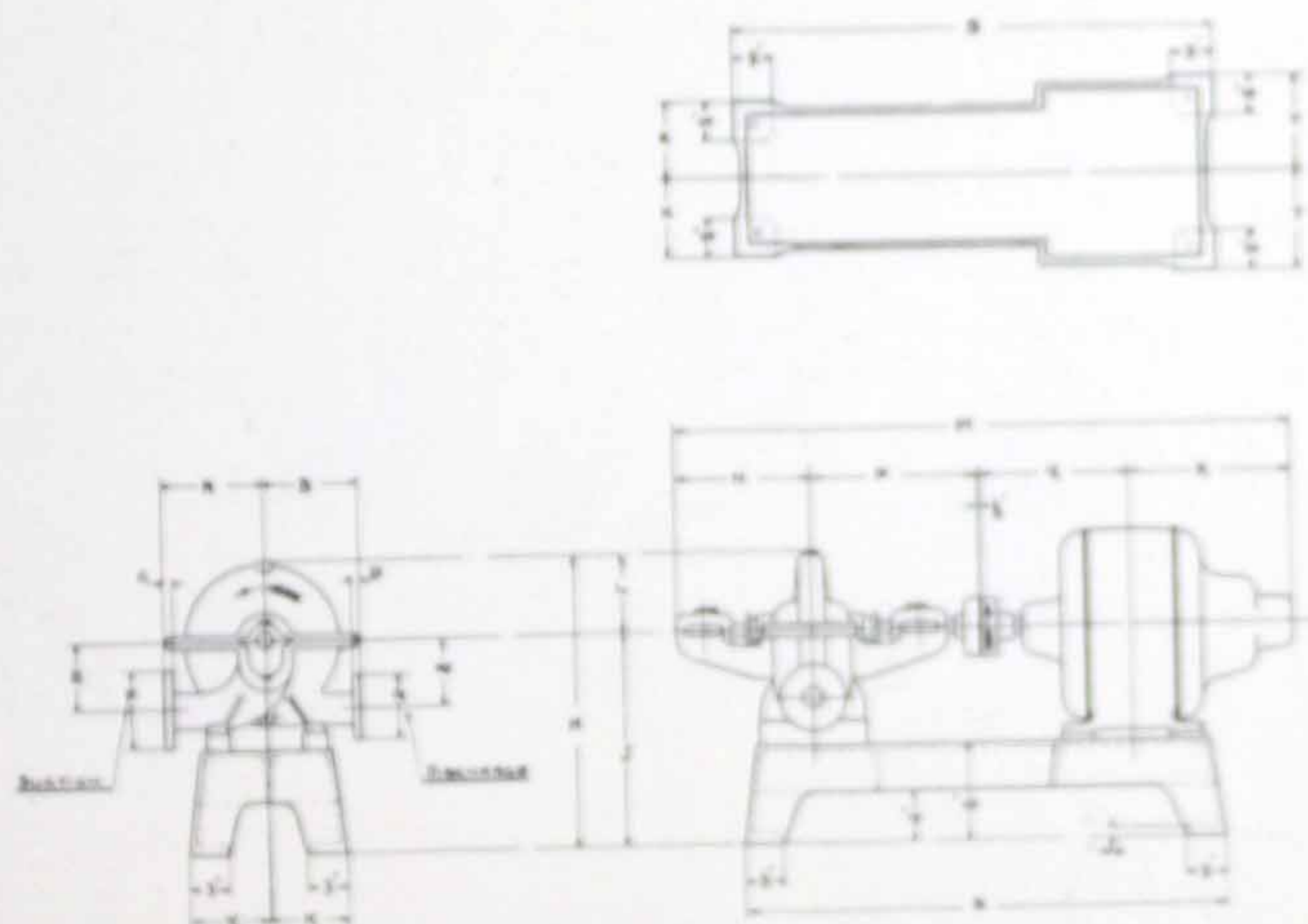
Characteristic curve C750 of type CST 2" Pump at 1750 RPM.

Note flat brake horse power characteristic for varying head and capacity

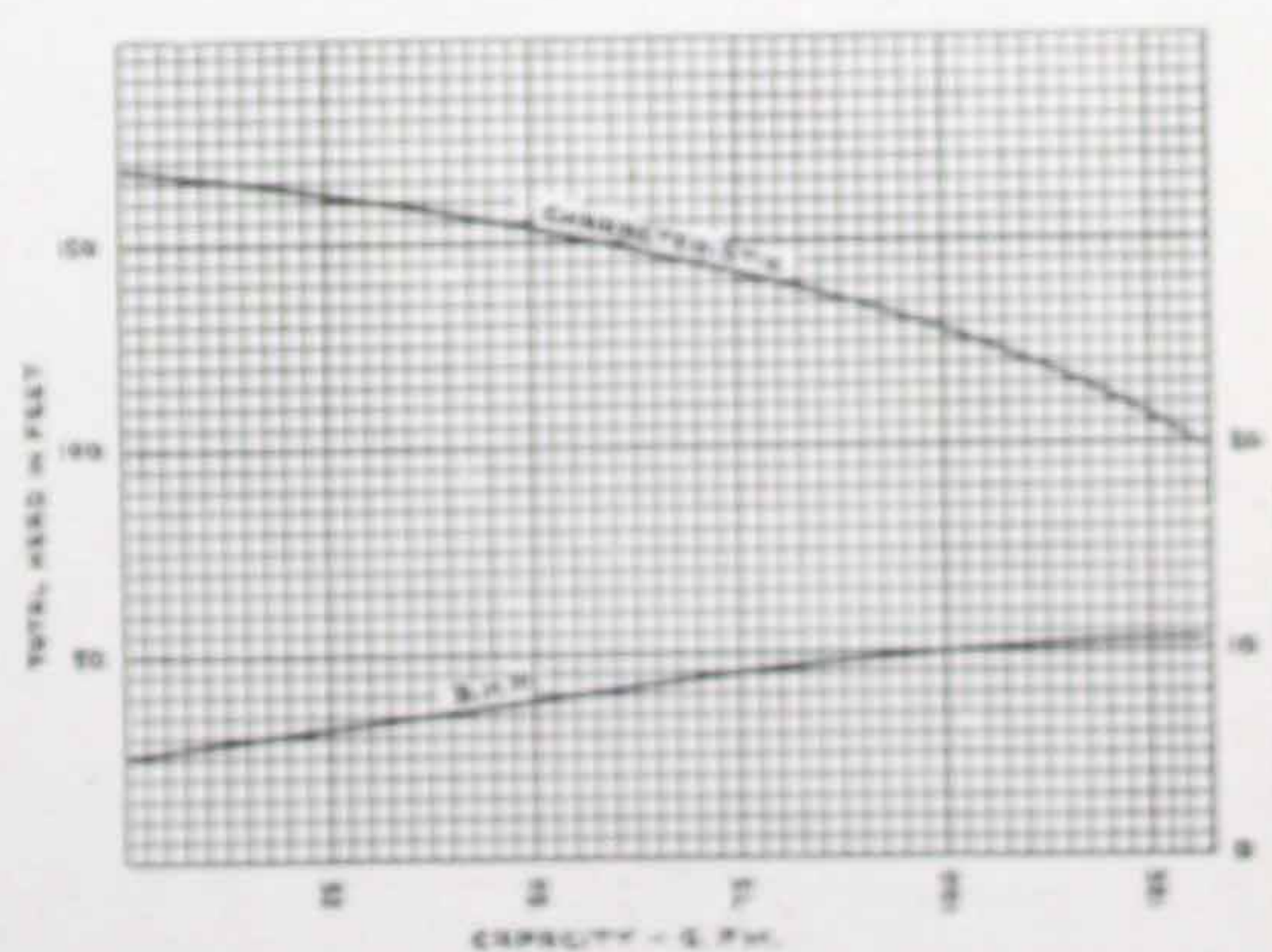
Dayton-Dowd Co. Quincy, Ill.

Size of Pump	Size of Discharge	Size of Suction	A	B	C	D	E	H	J	K	L	M	N	P	Q	R	S	T
1½ CST	1½	2	7½	7½	8	7½	5½	21½	15½	6	6	40	10½	12½	9½	6½	37	7½
1½ CST	1½	2	7½	7½	8	7½	5½	22½	16½	6	6	47½	10½	12½	11½	12½	37	7½
1½ CST Large	1½	2	10	10	8	8	5½	27	17	7½	10	49½	13½	16½	11½	8½	43	9½
1½ CST Large	1½	2	10	10	8	8	5½	28½	18½	7½	10	55	13½	16½	12	13½	43	9½
1½ CST Large	1½	2	10	10	8	8	5½	27½	17	7½	10	50½	13½	16½	11½	9	43	9½
1½ CST Large	1½	2	10	10	8	8	5½	29½	19½	7½	10	56½	13½	16½	12½	14½	43	9½
2 CST	2	2½	9½	8	1½	8	6½	24½	16½	7	7½	49½	13½	16½	11½	8	42½	8
2 CST	2	2½	9½	8	1½	8	6½	25½	17½	7	7½	54	13½	16½	12	12½	42½	8

Size of Pump	Size of Discharge	Size of Suction	DISCHARGE "G"			SUCTION "P"			MOTOR SIZE
			O. D.	Bolt Circle No.	& Size	O. D.	Bolt Circle No.	& Size	
1½ CST	1½	2	5	3½	4—1 Hole	6	4½	4—1 Hole	3 HP. 60 Cyc. 3 Ph. 17
1½ CST	1½	2	5	3½	4—1 Hole	6	4½	4—1 Hole	3 HP. D. C. 1750 R. P.
1½ CST Large	1½	2	5	3½	4—1 Hole	6	4½	4—1 Hole	10 HP. 60 Cyc. 3 Ph. 17
1½ CST Large	1½	2	5	3½	4—1 Hole	6	4½	4—1 Hole	10 HP. D. C. 1750 R. P.
1½ CST Large	1½	2	5	3½	4—1 Hole	6	4½	4—1 Hole	15 HP. 60 Cyc. 3 Ph. 17
1½ CST Large	1½	2	5	3½	4—1 Hole	6	4½	4—1 Hole	15 HP. D. C. 1750 R. P.
2 CST	2	2½	6	4½	4—1 Hole	7	5½	4—1 Hole	5 HP. 60 Cyc. 3 Ph. 17
2 CST	2	2½	6	4½	4—1 Hole	7	5½	4—1 Hole	5 HP. D. C. 1750 R. P.

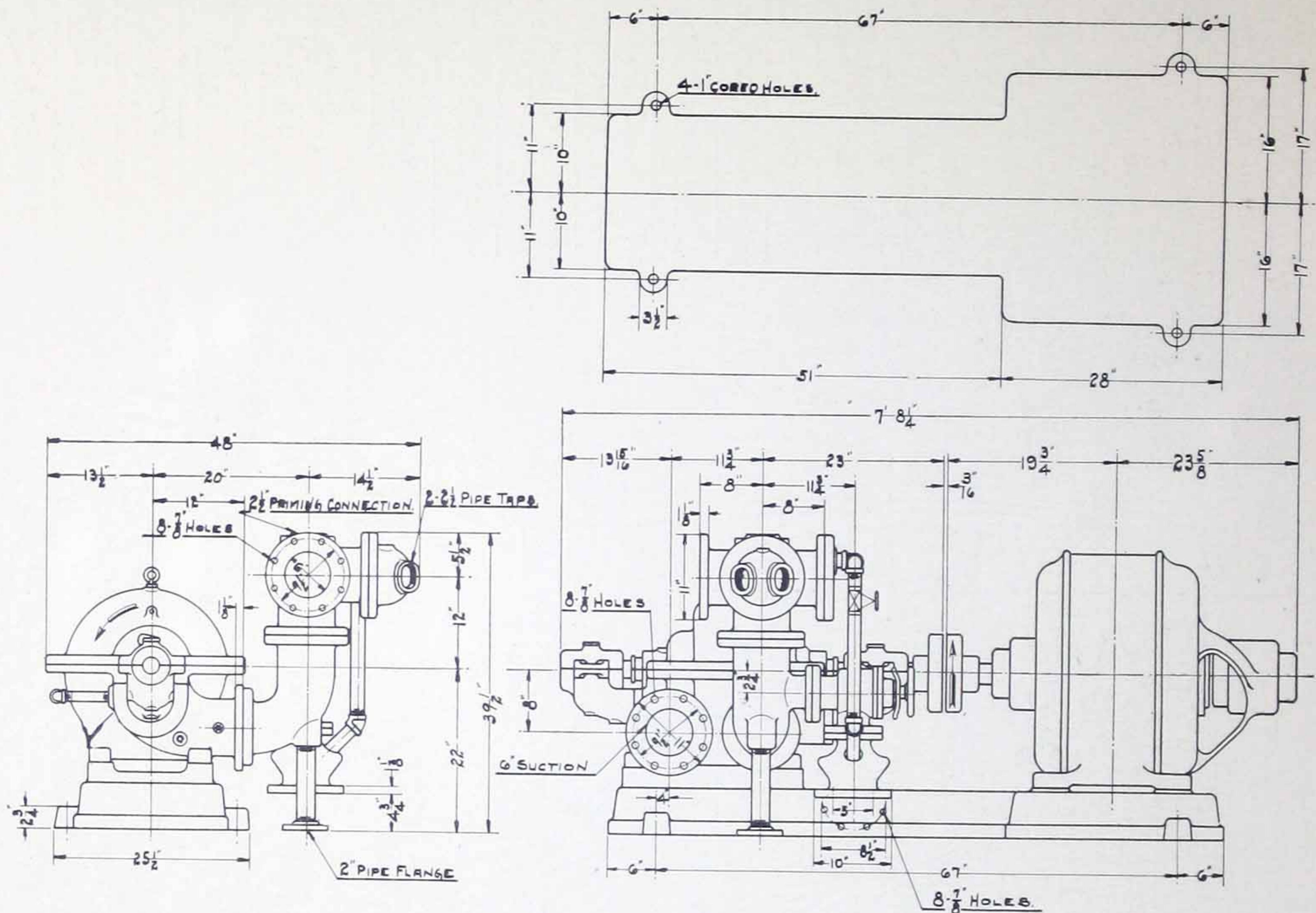


Characteristic curve C1018 of type CST 1½" large casing pump with 15 HP motor

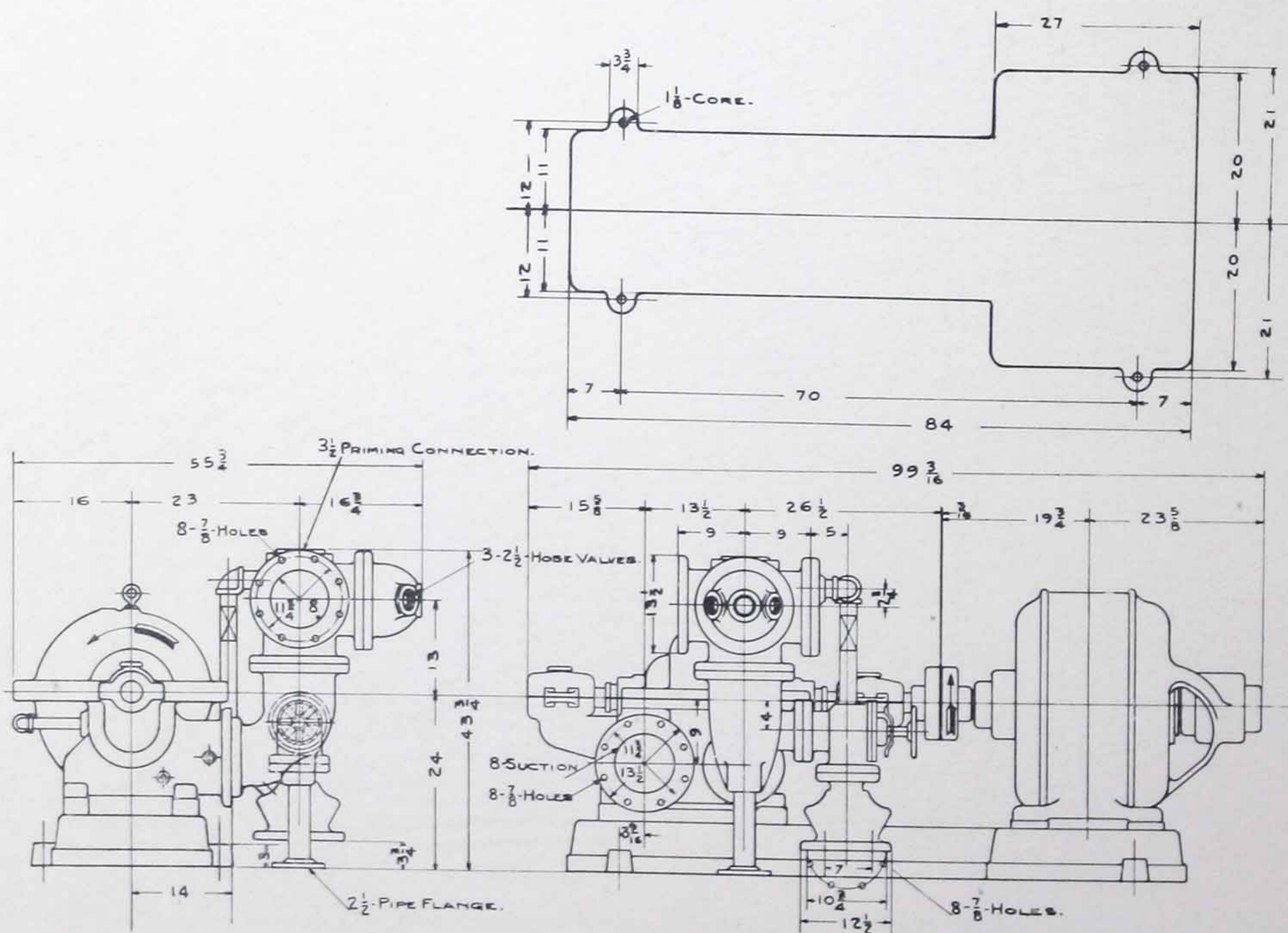


Characteristic curve C1009 of type CST 1½" large casing pump with 10 HP motor

DIMENSIONS DAYTON-DOWD CENTRIFUGAL FIRE PUMPS



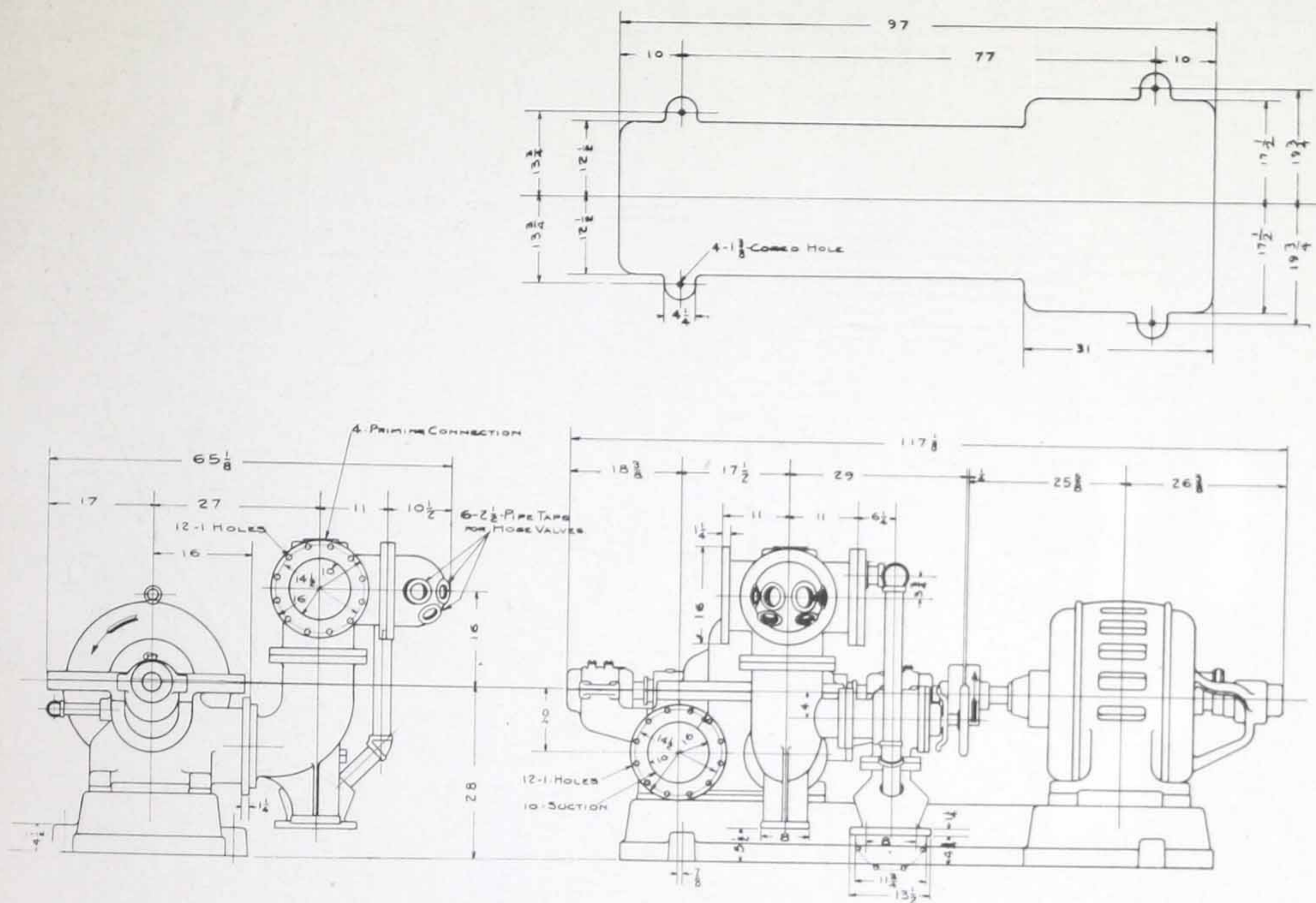
500 Gallon Fire Pump Floor and Elevation Plan



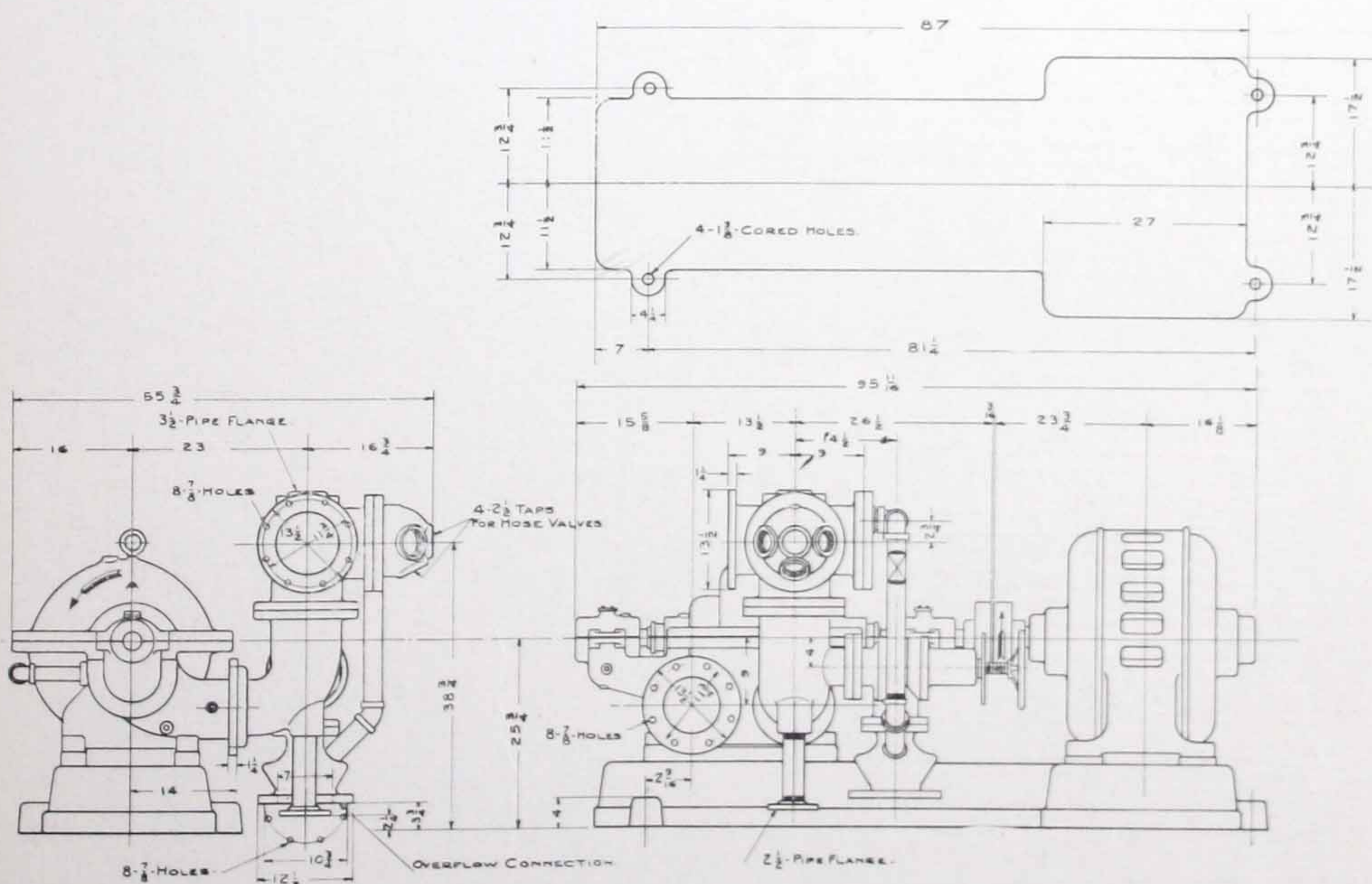
750 Gallon Fire Pump Floor and Elevation Plan



DIMENSIONS DAYTON-DOWD CENTRIFUGAL FIRE PUMPS



1,000 Gallon Fire Pump Floor and Elevation Plan



1,500 Gallon Fire Pump Floor and Elevation Plan

Dayton-Dowd Co. Quincy, Ill.

SUCH CONCERNS AS THESE ARE PROTECTING THEIR PROPERTIES AND SAVING YEARLY ON THEIR INSURANCE PREMIUMS BY THE INSTALLATION OF DAYTON-DOWD CENTRIFUGAL FIRE PUMPS

500 GALLON FIRE PUMPS

Crerar Library, Chicago.
Wolverine Hotel, Detroit, Mich.
Goetz Apartments, Chicago.
State Lake Theatre, Chicago.
Caner Bldg., Philadelphia, Pa.
Wrigley Building, Chicago.
Kresge Store, Detroit, Mich.

American Bond & Mortgage Bldg., Chicago.
Hirsch Bldg., Philadelphia, Pa.
Wilson-Jones Loose Leaf Co., Chicago.
Philadelphia Rapid Transit, Philadelphia, Pa.
Pensacola Compress & Warehouse Co., Pensacola, Fla.
First & Old Detroit Bank Bldg., Detroit, Mich.

750 GALLON FIRE PUMPS

Village of Oscoda, Mich.
Fisher Body Corp., Detroit, Mich.
Kling Brothers, Chicago.
Oscar Heineman Bldg., Chicago.
Birk Realty Co., Chicago.
Crosstown Corporation, Detroit, Mich.
Federal Reserve Bank Bldg., Chicago.
Malcolmson Bldg., Detroit, Mich.
A. B. Dick Co., Chicago.

Tuckasee Mfg. Co., Mt. Holley, N. C.
Pullman Couch Co., Chicago.
Frank & Seder Bldg., Detroit, Mich.
Chicago, Wilmington & Franklin Coal Co., W. Frankfort, Ill.
Davidson Brothers Co., Sioux City, Iowa.
Union Terminal Elevator, Minneapolis, Minn.
Geo. Ziegler Candy Co., Milwaukee, Wis.
Phillipsborn's Catalog House, Chicago.
Camp Nissakone Development, Mich.

1,000 GALLON FIRE PUMPS

Morgan Gardner Co., Chicago.
Gilbert Paper Co., Menasha, Wis.
Detroit Edison Co., Detroit, Mich.
C. B. & Q. R. R. Co., Cicero, Ill.
Cadillac Motor Co., Detroit, Mich.
Kirk-Latty Co., Cleveland, Ohio.
Armour & Co., Chicago Heights, Ill.
Ashton Mills, Ashton, R. I.
Victor Monaghan Mills, Jordonia, S. C.
Durham Hosiery Mills, Durham, N. C.
Enoree Mills, Enore, S. C.
Rowan Cotton Mills, Salisbury, N. C.
H. W. Cotton Co., Brooklyn, N. Y.
J. W. Murray Co., Detroit, Mich.
Central Paper Co., Muskegon, Mich.
Sycamore Mills, Sycamore, Ala.
Fidelity Products Co., Houston, Tex.
Bardeen Paper Co., Otsego, Mich.
Richmond Chemical Works, Richmond, Va.
Victor Chemical Works, Nashville, Tenn.
Hudson Motor Co., Detroit, Mich.
Fisher Body (Ohio) Corp. (2) Cleveland, Ohio.
Detroit Insulated Wire Co., Detroit.
Village of Oxford, Mich.
Nash Motors Co., Milwaukee, Wis.
Butler Brothers, Chicago.
Buhl Company, Detroit, Mich.
Tribune Bldg., Chicago.
U. S. Naval Station, Cape May, N. J.
Victor Monaghan Mills, Walhalla, S. C.

Swift & Co., Wilmington, N. C.
Ford Mfg. Co., Vandalia, Ill.
Chicago Carton Co., Chicago.
The Walter Co., Brooklyn, N. Y.
Western Felt Co., Chicago.
Central Bag Co., Chicago.
Ronda Cotton Mills, Ronda, N. C.
Vitanola Mfg. Co., Chicago.
Boston Store, Milwaukee, Wis.
Savona Mfg. Co., Charlotte, N. C.
Cohannett Mills, Spartansburg, W. Va.
Daniel Boone Knitting Mills, Chicago.
Packard Service Station, Detroit.
Chandler Motor Car Co., Cleveland.
Fulton Market Cold Storage Co., Chicago.
National Malleable Castings Co. (2), Cicero, Ill.
Channel Chemical Co., Chicago, Ill.
Economy Fuse Co., Chicago.
Edison Electric Appliance Co., Chicago.
Chicago Storage & Transfer Co., Chicago.
National Malleable Castings Co. (2) Chicago.
Washburn-Crosby Co., Minneapolis, Minn.
Sears Roebuck & Co. (2), Philadelphia, Pa.
Keystone Steel & Wire Co., Peoria, Ill.
Boger & Crawford Spinning Mills, Lincoln, N. C.
North State Cotton Mills, Taylorville, N. C.
Vitrolite Company, Parkersburg, W. Va.
Clayton Lambert Mfg. Co., Detroit, Mich.
Virginia-Caroline Chemical Co., Pinner's Point.
Federal Electric & Walker Vehicle Factory, Chicago.
Alexander City Cotton Mills, Alexander City, Ala.

1500 GALLON FIRE PUMPS

Buda Company, Harvey, Ill.
Beacon Oil Co., Everett, Mass.
Montgomery Ward & Co., St. Paul, Minn.
The Dayton Co., Minneapolis, Minn.

Continental Motors Corp., Muskegon, Mich.
Reo Motor Co., Lansing, Mich.
H. C. Wills & Co., Maryville, Mich.

DAYTON-DOWD COMPANY

MANUFACTURERS OF
Centrifugal Pumps, Approved Underwriters' Fire Pumps
QUINCY, ILLINOIS, U. S. A.

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